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An Address
ON
MEDICAL PROBLEMS:
THEN AND NOW.

Being the Presidential Address at the Opening Meeting of the Medical Society of London on Oct. 11th, 1920,

BY SIR WILLIAM HALE-WHITE, K.B.E., M.D.,
CONSULTING PHYSICIAN TO GUY'S HOSPITAL.

THE choice of a subject on which to address you has been difficult; it hardly seemed suitable to discuss a particular disease on such an occasion, but it struck me that it might interest you if I tried to show our ancestors' attitude of mind to medical problems, and to tell you what subjects were chiefly being talked about in the first 25 years of this society's existence, for thus we may each be able to contrast ourselves with the physicians and surgeons who lived in the end of the eighteenth century, and to dimly picture them at their work. The Medical Society of London was founded in the year 1773, two years after the Guy's Hospital Physical Society was born, other similar societies followed, and it is quite clear that our forefathers, at that time, were much in earnest in their desire to add to medical knowledge. It was not only that a few geniuses shone, but large numbers of the profession were enthusiastically determined to learn all they could, and, to quote from the preambles of the two societies mentioned, they—

"Desirous of improvement in medicine and the other sciences nearly allied to it and convinced of the numerous and great advantages arising from a free communication of observations and opinions," instituted this society "to give the practitioners in the healing art frequent opportunities of meeting together and conferring with each other, concerning any difficult or uncommon cases which may have occurred; or communicating any new discoveries in medicine which may have been made either at home or abroad."

SCIENCE WITH LITTLE MECHANICAL AID.

Because over a century ago doctors had not the help of the scientific instruments we possess some are inclined to consider our predecessors to have been unscientific. Nothing could be more unjust; the above quotations speak of medicine as a science and of communicating new discoveries. Your past President, James Sims, began a paper read before this society thus:—

"In philosophising there are two grand sources of error. The first is the determination of what anything is prior to the making of proper experiments upon it. The second ..... is the taking for certain the first conclusions drawn from appearances."

There were admirable papers by John Sherwen on the effects produced by the absorption of tartar emetic and arsenic from the skin. He says:—

"I made the first trial ..... upon myself, a duty which I think incumbent on every man who wishes to strike out new discoveries in medicine, and more especially when he attempts the use of dangerous drugs."

He took the precaution, before publishing his results, of repeating the experiments upon others who were unaware of the drug applied, for he was anxious to avoid the fallacy that he might by suggestion cause, in himself, the phenomena he expected. His experiments were repeated and confirmed by B. Hutchison. These two observers proved that symptoms, similar to those which follow the ingestion of these drugs, could be induced by applying them to skin, a matter in those days of considerable importance, for both were therapeutically used externally. Dr. E. Harrison had a patient who swallowed two iron nails; he gave him 7 fl. oz., 5 fl. dr., 20 m. of dilute nitric acid in the course of six days, one nail, much corroded, was passed by the bowel, and he suspected that the other had been completely dissolved by the acid, but before expressing this opinion in print he persuaded a dog to swallow some nails by wrapping them in meat; he then gave him acid, and found, at a subsequent autopsy, that the nails had been dissolved in the dog. There is an elaborate and most careful paper by Charles Kite "On the submersion of animals, its effects on the vital organs and the most probable method of removing them." Anyone nowadays working at the subject of death by drowning ought to consult this paper.

Other experimental papers which may be mentioned are: "On the effects of the compression of the arteries in various diseases," by Dr. H. Parry, and "Experiments made on the laryngeal and recurrent branches of the eighth pair of nerves, with a view to determine the effects of the division of these nerves on the voice," by J. Haighton, and by the same author, "Experiments on vomiting designed to show that vomiting cannot take place by the stomach only. The abdominal muscles and diaphragm must coöperate." In 1794 we find that Mr. Coleman relates to the Guy's Hospital Physical Society that he has ligatured the carotid of an ass in two places and has observed that the blood between the ligatures was coagulated, and that he brings forward these results as he considers they have an important bearing on the treatment of aneurysm.

Value of Evidence.

Enough has been quoted to show that then the scientific value of experiment was acknowledged, but our ancestors also had open minds appreciative of the value of evidence. For example, in Vol. IV. of our Memoirs, Dr. Samuel Black describes how in a case of angina pectoris he found, after death, extreme ossification of the coronary arteries. He mentions that some have considered angina pectoris to be due to diaphragmatic gout, but, says Black:—

"If a physician will not carefully discriminate between casual conjunction and a necessary connexion his practice will in many cases be unsuccessful, his judgment erroneous, and his errors fatal."

In the same volume is a paper by James Sims on the internal use of silver in "The Epilepsy." He writes:—

"We know very little of the causes or of any different species of epilepsy. To read authors, a person would be led to suppose that these things, together with the method of cure, were well known, whereas I will venture to assert that hitherto very little is known of this disease, everything concerning it being involved in the greatest doubt and obscurity, if we except the description of a single fit and that it returns at uncertain intervals."

In 1783 Dr. Hawes got up and told the members of the Physical Society that he had heard from a practitioner of the case of a man insensible, who had been revived by applications of cold. He was particularly pleased to relate this, for in his lectures he had always advised warmth in these cases. Surely scientific openness of mind and candour could go no further than this and it will be well for all of us if we constantly remember Dr. Hawes.

We can picture the vigour with which attention was directed to sciences bearing upon medicine, when we read that a debate on fermentation lasted four evenings and one on animal vitality was continued for six successive nights. The very fact of the foundation of these medical societies shows enthusiasm for the enlargement of professional knowledge. Papers from all parts of Great Britain and Ireland, from the Colonies, even including so small a one as St. Kitts, were read, careful post-mortem examinations were sometimes made, bold operations, such as Cæsarean section, were undertaken, and cases were recorded with an exactitude and care that might well be imitated to-day. Our forefathers were trained observers, probably more highly trained than we are, for they were more dependent on themselves, as they had no stethoscopes, no microscopical examinations of the blood and urine, no bacteriology, no ophthalmological, laryngological, cystoscopic, and X rays examinations to help them. We have now so many aids by which the observation of the patient may be extended that it requires careful reflection to enable us to imagine the difficulties under which medicine was conducted at the end of the eighteenth century. We have more knowledge than our ancestors, for manifold additions have been made to it, and our instruments and methods of investigation have become more numerous and precise, but if anyone will read these old Memoirs and Proceedings he must conclude that physicians and surgeons then had as much wisdom as we have, and from their scanty data drew conclusions as skilfully as we do from the more numerous facts at our command. They had as great devotion to their profession, as earnest a desire to advance knowledge, as keen observation, as good a perception of the value of experiment and evidence, as accurate powers of thought as their present-day descendants; indeed, there is no reason for supposing that our minds are better than

theirs. We are probably making mistakes which to our descendants will appear as gross as those of our ancestors appear to us.

ERRONEOUS METHODS OF TREATMENT.

As a century ago knowledge was circumscribed in comparison with its present-day extent, and proper treatment depends on it, we find that in this department the errors of the past are manifest. All surgery was hampered by the fact that anæsthetics and micro-organisms were unknown; medicine was not for another 50 years to escape from the doctrine that bleeding was almost always desirable, but when the error of almost universal bleeding was widely seen the conclusion was incorrectly reached that no bleeding is beneficial, and even now it is not done as often as it should be. The amount of blood withdrawn was often prodigious; for example, in the first volume of our Memoirs a case is recorded in which the patient, although bled in the morning, was in the evening bled to 56 fl. oz., and many patients were undoubtedly bled to death. The confusion was made of attributing the symptoms produced by the bleeding to the disease; often we read of patients who, from accident or confinement, had lost much blood, who were bled to large amounts, and of those in whom, as the pulse was weaker after a venesection than before, this was repeated. Our emancipation from this error is due, in the first place, to the publication in 1830 of Marshall Hall's "Researches Principally Relative to the Morbid and Curative Effects of Loss of Blood." Another example of failing to distinguish between the effects of the remedy and those of the disease sometimes seen in the older papers, is that the symptoms caused by overdose of mercury were ascribed to the syphilis for which it was given. For all we know we may still be unwittingly, on some occasions, attributing the effects of treatment to the disease for which the treatment is given; indeed, I have myself seen this done, as, for example, when symptoms really due to overdosage with thyroid are ascribed to the myxœdema for which it has been prescribed. Blisters were much more in vogue 150 years ago than they are now, but we must remember that they were often employed in cases which would in these days be passed to the care of a surgeon. Setons have rightly gone out of fashion, so, too, have tobacco enemata; sometimes an infusion of the leaves was given; sometimes tobacco smoke was passed into the rectum. The interesting case is recorded of a man in whom a piece of beef became impacted in the œsophagus; it could not be moved by a bougie, nor could any emetics be got past it into the stomach; he was given a tobacco enema which led to his vomiting the pieces of meat. Large quantities of Peruvian bark were often given for all sorts of disorders other than malaria; many physicians—e.g., Dr. William Saunders, wrote books about it. It certainly did no harm, but acting as a bitter and so aiding digestion it must often have been beneficial. Let those who criticise this wholesale administration of bark remember that malaria was rife in many parts of Great Britain, that as its cause was unknown and it had not been differentiated from other diseases, and as the benefit of bark was in some instances so dramatic, it was almost natural to give it for all sorts of conditions. Do we not now often give drugs—e.g., iodide of potassium—on equally or even more slender grounds?

THE PATHOLOGY OF OUR FOREFATHERS.

Leaving treatment and turning to pathology, these papers of distant times show how firmly fixed in our forefathers' minds was the doctrine of vicarious menstruation. Bleeding from the lungs and from the gastro-intestinal tract was frequently ascribed to this cause, and belief in it died hard, for as recently as 1897 Oser says:—

> "Kuttner has from the material of my *Poliklinik* shown that in women vicarious bleeding into the stomach in place of menstruation or bleeding associated with menstruation may occur."

The reason of this mistake was that, although many physicians made autopsies, yet the science of morbid anatomy founded, as it is on systematic post-mortem examinations, had not then been established. We now know that the cases of so-called vicarious menstruation from lungs were, for the most part, examples of hæmoptysis due to tubercle, and those in which the bleeding came from the gastro-intestinal tract were really instances of gastric ulcer, duodenal ulcer, gastrostaxis, cirrhosis of the liver, or piles. We know that gastrostaxis most often occurs in young women, that cirrhosis of the liver is commonest at the ages of 20 to 50 years, and that fatal phthisis is most often met with in young adults, so that as the age of these hæmorrhages corresponds roughly with that of menstruation, and, owing to the large number of cases of gastrostaxis, the total number of such hæmorrhages is greater in women than men, the error arose of considering them to be due to vicarious menstruation. But we cannot claim that in 1920 we have escaped the sin of erroneous deduction. Another instance in which morbid anatomy has thrown light upon what was to our ancestors obscurity is the discovery that by far the most frequent cause of hydrocephalus is tuberculous meningitis. Several cases of what were undoubtedly examples of this disease are recorded in the early Memoirs of this society. In some a post-mortem examination was made; but although, from the description given, it is clear that tuberculous meningitis was present, neither the meningitis nor the tubercles were recognised. Even when I was a student an examination paper asked the candidate to describe a case of acute hydrocephalus, meaning thereby tuberculous meningitis. Mercury was looked upon as the most likely drug to cure this disease. Cases of recovery after its administration are given; it still appears occasionally to be of benefit, and we know that a few cases of tuberculous meningitis may get well. It is not, however, fair to discuss pathology as known at the end of the eighteenth century. Post-mortem examinations were not performed systematically, only a few enthusiasts made them. There were no microscopes, bacteriology and clinical chemistry were unknown, and John Hunter had only just begun his publications, which are the beginning of experimental medicine.

ERRORS OF DIAGNOSIS.

The most common mistakes in diagnosis lay in the domain of nervous diseases. Many cases obviously hysterical are described, but it is not recognised that the disease is hysterical; for example, Dr. Hutchisson records "a case of tetanus treated by electricity."

> The patient, a young girl, 16 years old, had no wound, she suffered from lumps in her throat, she woke up one morning with lockjaw, which was cured by electric shocks. The case is given of a girl, aged 12, who had opisthotonos and spasticity of other muscles; she got quite well, but it is not suggested that she was suffering from hysteria, nor that aphonia cured by electricity was hysterical.

Sometimes then, as now, malingering was unrecognised.

> The extraordinary case is given of a young woman who vomited urine, passed it from the navel and from the anus; at times it contained gravel. A post-mortem examination was held and nothing abnormal was found except some suppuration in connexion with the uterus; nevertheless, the author does not suspect malingering.

But in defence of our forefathers it must be remembered that the physiology of the nervous system was very elementary, that morbid anatomy as a science had not arisen, and that even now hysterical and organic diseases are frequently confounded.

THEIR POWERS OF OBSERVATION.

Having briefly glanced at the errors of the first members of this society let me now give a few examples to illustrate that physicians and surgeons between 1775 and 1800 were, as far as their knowledge allowed them, no way inferior to us. That their powers of observation of the nervous system were good is shown by a paper in the second volume of our Memoirs, "Observations on the Palsy," by William Falconer.

> He notices that sometimes the affected muscles are wasted, sometimes they are not; that paralysed limbs are usually flexed; that movements requiring nicety—e.g., writing—are more affected than those that are grosser. Most paralytic complaints that he had seen were hemiplegias or "palsies of half the body in a longitudinal direction." It is curious that he doubts the existence of what we call para-

plegia, and he considers that when both lower extremities are paralysed the cause is "rheumatism and other complaints." He recognises that plethoric persons are specially liable to apoplexy, but he does not show that he knew this to be due to cerebral hæmorrhage. He knows of palsy due to lead, arsenic, and mercury.

For wise advice upon the treatment of œsophageal stricture we can improve but little upon that given by James Johnstone in 1787.

He remarks upon the uselessness of many of the recommended treatments and the folly and danger of forcing the stricture with a probe. He urges the passage of bougies, which should be discontinued if they do no good; the use of oily substances to help the passage of the bougie, fluid food and opium to relieve spasm. Another instance of judicious surgery is shown in the treatment of a man who fell from a scaffold and lit on his perineum. The urethra was ruptured, great quantities of blood and urine were extravasated into the scrotum, perineum, and parts around. Mr. Norris punctured the bladder per rectum; the patient got perfectly well. The author records the case because the operation was rarely done in this country and he thinks lives might be saved by it.

There is an admirably described case by Dr. Anthony Fothergill, who was called to see a man of 64 who had great difficulty of micturition.

Fothergill and those whom he called in consultation were at a loss for an explanation; accordingly he wrote to William Hunter who, in reply, after stating that the physician who sees the patient is the best to treat him, says this case appears to be one of enlarged prostate, and the way to discover this is to examine the rectum, and that for treatment a flexible catheter is what is wanted. The patient refused to have a catheter passed. He died, and a full description is given of the enlarged prostate, dilated bladder, and ureters. Fothergill discusses the case excellently, and the advisability of puncture of the bladder by the rectum, if a catheter cannot be introduced, is considered.

There is a paper by Jonathan Watken, in which he insists that accurate diagnosis is fundamental; what he says is as worth reading to-day as in 1771. His cases are admirable; incidentally he describes tuberculous ulceration of the larynx "a mortal disease which I do not find described in any writings that have occurred in my reading." He concludes thus:—

"What enables us to form a just diagnosis renders us capable of giving a right prognosis, whilst both are equally necessary to make us honourable as well as successful in our profession."

The use of hyoscine for asylum patients is foreshadowed by Dr. Fothergill, who used the perfectly fresh extract with great success. It is interesting to note that "at the lunar periods the symptoms generally increased" and that venesection "was performed a little before the full moon." Dr. John Aikin gives a vivid description of a very severe case of purpura hæmorrhagica, although he does not so name it. The patient recovered. He records it because he says that authors have not hitherto taken proper notice of such cases, and have incorrectly placed them under the head of febrile diseases. But this, he says, cannot be correct because there is no fever, nor is it correct to ascribe the condition to a debilitated state, for this follows the purpura.

As during the late war the treatment of dysentery by ipecacuanha was so much before us it is interesting to find accounts of it in our early Memoirs.

In 1768 Captain Cardin relates how on the West Coast of Africa he had never once been disappointed by it. He gave 4 gr. of the powder with laudanum, and continued the drug till the patient was cured. Dr. Balmain, practising in Norfolk Island, also used powdered ipecacuanha with opium and obtained excellent results. We know guaiacum resin to be a powerful diuretic in certain cases of dropsy, but as long ago as 1789 Mr. Chamberlaine, of Jamaica, recorded cases showing its usefulness. There are several papers on digitalis which was employed, often with great success, as a diuretic; sometimes it failed, but that is the case to-day, and some of the failures were probably due to the administration of too large a dose. It was also used as a depressant, but then a very considerable quantity was given, and William Currie ranks it among the sedative poisons, using it in mania and hæmorrhage; it acted, with "pretty full doses" repeated "so as to produce languor, faintness, and considerable irregularity of the pulse," as a severe cardiac depressant, and thus secondarily as a depressant of the nervous system. It will be recollected that it is even now sometimes recommended for delirium tremens. There is an admirable "History of a case of croup terminated fatally, with a dissection and incidental remarks," by Henry Field. The case is clearly one of diphtheria. He says it is commonly believed not to be contagious, but he doubts this; he urges that bleeding is harmful, that death takes place from suffocation by the membrane, that the trachea should be opened, and that tartar emetic may be a useful drug. Until the discovery of antitoxin we could not better this.

That the importance of industrial diseases was appreciated is shown in a paper dated 1799, entitled "Some Account of a Species of Phthisis Pulmonalis Peculiar to Persons Employed in Pointing Needles in the Needle Manufacture," by James Johnstone. He tells us how fatal this occupation is because the dust produced by grinding the needles on a stone enters the lungs, and he makes the reasonable suggestion that workers should wear a mask, and that they should not be allowed to cool the heated needles with their saliva, but should be given water for this.

In these times long ago we get a hint of antiseptics, for on more than one occasion it was stated that a poultice made from beer grounds was most efficacious, making us wonder whether this was due to the antiseptic properties of the alcohol, and in 1795 we have a suggestion of the same property of mercury salts, for Mr. Davies relates a curious circumstance. Two subjects were brought into the dissecting-room. On the second day one had become putrid and was covered with maggots. The other adjacent to it was avoided by flies. This patient had been heavily treated with mercury for syphilis. Was, asks Mr. Davies, this the reason why the flies avoided the body?

The descriptions of cases often contain a more personal reference than is now usual; thus at the end of an account of the passage of large biliary calculus per rectum we are told that the patient "happily returned to his family, which he left, consisting of 12 children and an associate still more dear." In the relation of a case of aneurysm it is stated that the patient was "kitchen gardener to a noble duke no less conspicuous for humanity, benevolence, and other virtues than his exalted station."

Before leaving this part of our subject we may observe some curiosities.

It appears from a paper by Dr. Lettsom, entitled "Of a Disease Succeeding the Transplanting of Teeth," that it was by no means infrequent to remove a tooth from an apparently healthy person, wash it in warm water, and to immediately insert it into the socket of another person from whom a bad tooth had been removed; in this paper several resulting cases of syphilis are recorded. One doctor gave to his patient 2 lb. of common salt dissolved in 2 quarts of water within the space of one hour; great oppression of the stomach, vomiting, purging, sweating, rawness, and soreness of the alimentary canal, thirst, and strangury ensued, "but these distressing symptoms were of short continuance." Dr. Hubbard relates a case of a patient struck by lightning, in whom the application of nettles to the whole surface of the body restored animation, which had been suspended at least an hour. The last I will mention is that one doctor had a patient who passed two guineas per rectum.

EARLY TOPICS OF INTEREST.

The final part of my subject is to indicate to you the matters which mostly interested the profession from the foundation of this Society to 1799. Vaccination hardly comes in, for Jenner's first publication on the subject was not made till June, 1798, and he could not get anyone in London to allow himself to be vaccinated until Mr. Cline performed the operation on some patients. This aroused interest in the subject at the united Hospitals of Guy's and St. Thomas's, with the result that Jenner gave an account of his discovery at a meeting of the Physical Society of Guy's Hospital in 1802. He himself attended on four successive evenings. A full account is given in Bacon's life. Hydrophobia, tetanus, influenza, and typhus were the diseases which occupy perhaps the largest space of any four in the earlier numbers of our Memoirs. The first five volumes contain ten papers on *hydrophobia*, and it was frequently discussed at the Physical Society. It was a terrible scourge, happily now stamped out in man in this country by muzzling, which we owe to Mr. Long. Those who, like myself, have seen human cases know that there is no more awful disease, none with greater suffering, none more appalling to witness. As an old writer says, "Fancy cannot paint a more distressing scene." I find this recorded in 1795.

A young man, married a few days before, was during the night seized with a paroxysm of hydrophobia. He tore open the abdomen of his wife with his teeth. Both were found dead, he with the intestines of his dead wife around his bloody arms. Very occasionally those afflicted recovered,

and several authors recognised that the best hope lay in immediate destruction of the wound either by complete excision or by the application of some strong destructive. Thus, Dr. Johnstone says: "I apprehend the surest preventive is to cut away or scarify the bitten part immediately, and to destroy it by caustic or actual cautery." Mercury or antimony were applied to the wound, and, if they did any good, no doubt acted as antiseptics. Dr. White, of St. Edmundsbury, in 1792 stated that his part of the country had been terribly infested with mad dogs. He records that a foal was bitten on the nostril by a mad dog. He excised the wound and five months after the animal was quite well, although a horse, a cow, and two pigs bitten by the same dog on the same day had all died. They were treated by internal remedies; excision was not attempted. He records ten cases in human beings, in all of whom the bitten part was wholly removed. Thus, in one case the bitten finger was amputated. He is "in hopes from the interval that has elapsed that they are freed from danger." "Two persons on whom excision and ablution had not been performed, and to whom medicines of false repute had been given, fell victims to their credulity." He considers that the virus may be exterminated by excision many days after the injury. Dr. Dexter says the following plan is found in New England to be most successful: "Immediately after the accident the part is well washed in warm water saturated with common salt, then scarified and cupped, and 1 to 2 drachms of strong mercurial is rubbed into the wound and the adjacent parts; this is continued for 25 or 30 days if signs of mercurial poisoning do not supervene."

The perusal of all these papers leaves the reader with a strong impression that excision of the wounded parts or their destruction was the most approved treatment. The earlier this was done the better, and a case is given in which death ensued, although excision was performed and caustic was applied four days after the bite; nevertheless, the opinion was that it was always worth while trying this plan any time after the bite before the symptoms of hydrophobia appeared, for, as is well known, this may not be until many months later. In one of the cases here recorded it was nine months. You will, I know, agree with me that, considering the state of knowledge then, most hope lay in excision or destruction of the wound and strong antiseptics, as advocated by the majority of writers at the time. Giving an oil bath, or inunction with or drinking oil was advised by a few. Domestic animals—e.g., horses, cows, and pigs—were frequently afflicted with the disease after being bitten by a mad dog. Dr. Shadwell says he was told that a pig thus affected leapt 12 feet in the air, but he does not believe this.

Tetanus, Influenza, Typhus.

Tetanus occupies a considerable space in the first five volumes of our Memoirs. Excision of the wound before the symptoms appeared was not practised, because, unlike hydrophobia, there was nothing in the mode of infliction to show that tetanus is likely to follow. The disease could only be treated after its appearance, and the treatment was as good as could be adopted, its object being to relieve the spasms. Hence enormous quantities of opium were given.

For example, one sufferer had 2 gr. of opium every hour and later 5½ fl. oz. of laudanum in 26 hours. Alcohol was given for the same purpose; thus, a man who got well had from 60 to 120 drops of tincture of opium every night, and he also had 110 bottles of port in 42 days. In spite of this quantity he never had "any symptom of ebriety; it soothed the irritation of his nerves and comforted his mind, and without increasing the frequency of his pulse it augmented his strength." James Currie and others advised the cold bath. A man suffering from traumatic tetanus was thrown into the public salt-water bath at Liverpool, the temperature of which was 36° F. The good effects in this case were instantaneous. These baths were repeated for 14 days and the patient got quite well. Other cases treated in the same way are recorded, and we find that a horse was treated by being thrown into a river, and another by having cold water poured over him. But as our present experience would lead us to expect, treatment usually failed.

Influenza came in epidemics, and was the cause of much illness.

Dr. Fothergill states that in November, 1775, "it began to make its appearance at Northampton, and soon became more general than any other epidemic within my remembrance." Horses suffered; it ran through whole packs of hounds. He was quite unable to explain its coming. Another epidemic occurred in 1782. Altogether in that century there were epidemics in 1709, 1733, 1743, 1762, 1767, 1775, and 1782. From the descriptions given the symptoms were much the same as we know; perhaps sore-throat and cough were even more common; cough was very constant and very severe. Collective investigation is by no means new. Such was the seriousness of influenza that in 1803 this Society sent a list of 32 questions about influenza to each of its corresponding members. Fifty-eight answered, and their replies occupy more than 300 pages of our Memoirs. The Government attached so much value to this investigation that they franked all the replies.

Typhus was then common. Jenner had it. Lettsom was called to see Lord George Gordon in Newgate on Oct. 25th, 1793. He died from typhus. Other prisoners died and the doctor to the prison caught it. Lettsom, in a paper on Newgate prison, gives excellent advice as to the best way of preventing typhus in gaols.

The reading of these ancient volumes was undertaken in order that by actual extracts from them I might carry you back to the time at which the societies were founded. If I have succeeded and you have reached the same conclusion as myself it will appear to you that in actual knowledge we are far in front of our forefathers who lived 120 or more years ago, but that in enthusiasm for learning all that lies in our power to know about medicine and surgery, in scientific attitude of mind, in careful observation, in wisdom and in sound judgment, they were fully as capable as we are, and that if we, present members of the Medical Society, use our much greater knowledge as well as our earliest members used theirs, we shall be doing well.

EXTRAPLEURAL THORACOPLASTY IN THE TREATMENT OF PULMONARY TUBERCULOSIS,

WITH AN ACCOUNT OF 37 CASES.

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THE theory underlying the operative treatment of tuberculosis of the lungs is in close connexion with the conception that certain mechanical factors facilitate the development of pulmonary tuberculosis or present obstacles to its cure. It is now almost two generations since W. A. Freund put forward his well-known hypothesis in explanation of the predisposition of the apex of the lungs to tuberculosis.

He considered that the cause was to be found in the rigidity of the first rib, which to some extent constricts the apex of the lung. As in addition the first costal cartilage is often found to be calcified in cases of pulmonary tuberculosis, the range of movement of the first rib is still further restricted in these cases. In Freund's opinion both these factors occasion reduced mobility of the apex of the lungs, and thereby diminished activity in this region. Following this hypothesis a resection of the cartilage of the first rib in cases of apical tuberculosis was at one time suggested. This proposal, however, has rarely been put into practice. The object of such an operation must either be prophylactic or curative in early cases of pulmonary tuberculosis. In the former case it would be impossible to lay down serviceable indications for the operation, and the latter class consists of patients who often recover without operation, operative treatment, therefore, not being indicated. An additional argument against this operation is that its essential object, the production of greater mobility in the apices of the lungs, conflicts with the generally accepted principle for the treatment of tuberculosis by immobilisation.

There was a better foundation for the proposal, put forward by H. Quincke in 1888, to remove the rib covering a cavity in the lung, for Quincke started from the correct supposition that it is mainly the rigid chest wall that prevents the walls of a cavity from collapsing on the contraction of the fibrous tissue formed in the lung. Quincke's proposal did not meet with the support one might have expected for it; C. Spengler alone took up the idea, but he employed the method solely in cases with coincident pleural exudation. It was not until 1903 that he performed the operation to which he gave the name extrapleural thoracoplasty.

K. Turban may be said to have been the first to remove any considerable section of ribs in unilateral pulmonary tuberculosis. In 1899 he removed 64·5 cm. of ribs from the fourth to the tenth. In 1902 Landerer published no less than nine similar cases. However, the operation did not win other advocates as the results were not good. It was not until experiences of pneumothorax treatment had shown that it was not only essential to get the lung partially collapsed, but that it must be put completely out of action, that in 1907 it occurred to L. Brauer, at that time professor of medicine at Marburg, that a large part of the ribs must be removed if both the above objects were to be achieved. In December of the same year, on Brauer's initiative, P. L. Friedrich performed his first great thoracoplasty, employing M. Schede's large arc-shaped incision for old empyema. At first Friedrich aimed at removing the intercostal muscles and periosteum as well as the bone, but this

technique increased the difficulties of the operation so much that it was subsequently abandoned. Friedrich's operation forms the starting-point for a numerous series of operations since performed, chiefly by Friedrich, Brauer, and particularly F. Sauerbruch; also by Wilms.

The improvements that have taken place during the last few years consist mainly in the alteration of the site of resection to the posterior part of the ribs, and in the employment of local anæsthetics instead of narcosis.

At the Congress of Northern Surgeons at Gothenburg, 1916, I read a paper on my first 11 cases of thoracoplasty for pulmonary tuberculosis, the first operation having been performed in May, 1914. On the same occasion Dr. E. Key, of Stockholm, reported 7 cases and Dr. Christensen, of Christiania, 4 cases. At the Congress of Northern Surgeons at Christiania, July, 1919, the following references were made to operations performed: Dr. Key, 34 cases (4 dead); Professor C. Saugman, director of Vejlefjord Sanatorium, Denmark, 41 cases (4 dead); Dr. Christensen, 13 cases (0 dead); and I myself, 37 cases (4 dead). In the last year I have carried out 11 new operations, making 48 in all; but as I cannot yet know the ultimate fate of these last patients I will here discuss the first 37 only, in whom the operation was performed from one to six years ago. Of the 37 patients 12 were males and 25 females. I operated 24 times on the left side, 13 times on the right, left and right in equal numbers in the men, and 18 left, 7 right in the women.

Technique: Introductory Remarks.

The object of extrapleural thoracoplasty is to produce collapse of the lung. Of the various methods employed for that purpose, the best is that which combines the least risk to the patient's life and future capacity for work, with the greatest likelihood of a sufficient falling-in of the wall of the chest and resultant retraction of the lung tissue, at the same time putting the lung more or less out of action. Those surgeons who have specially occupied themselves with this branch of surgery—viz., Friedrich, Brauer, Sauerbruch, and Wilms—have more and more closely approached each other's methods, and apart from the question of priority there is now a practical unanimity in the main features of the method, the greatest stress being laid upon the removal of the posterior section of the rib. This idea constantly appears in the "eighties" and "nineties" during the development of suitable methods of operating for old empyemata. It was A. Boiffin who in the middle "nineties" first clearly demonstrated, through J. Gourdet, a pupil, precisely why it is the posterior portion of the rib that must be removed. Gourdet's argument is as follows:—

On account of the yielding rib cartilage the anterior part of a rib can be pressed inwards, whilst the posterior portion is stiff and, practically speaking, immovably connected with vertebral column, and in any case can only be moved up and down a little. Further, the posterior part of a rib exhibits a marked concavity forwards, or, in other words, forms an arc the radius of which is much less than that of the arc of the rib otherwise; the angle of the rib forms the most prominent point in this arc behind. Any resection of the ribs which is situated in front of the angle of the scapula leaves behind a stiff unyielding piece of rib, which in accordance with its length will prevent the soft parts from falling in and diminish the costo-vertebral angle. If, on the other hand, we remove the posterior stiff part of the ribs the anterior part can very easily be turned about the costal cartilage and pressed in towards the thoracic cavity and backwards towards the posterior fragment of rib, so that the entire arc of the rib decreases considerably in its curve and thereby also decreases the volume of the thorax. By this method the anterior part of the ribs is not hindered in its movements by the soft parts, which in other methods stretch over the projecting posterior end of the rib. This principle, as set forth by Boiffin-Gourdet, runs through both Sauerbruch's method of operation and Wilms's "Pfeiler-resektion."

From Gourdet's book I have taken some drawings which illustrate these conditions in the various methods of operation. (See Figs. 1, 2, 3, 4.)

Which ribs, and how much of each rib, should be resected in order to be sure of obtaining the necessary effect?

Before replying to this question it is essential to form a clear idea of the fact that the objects of extrapleural thoracoplasty lie in two directions, which, however, converge. One object is to produce collapse of the lung, the other is to put it out of function, the latter being in conformity with the general rule for the treatment of tuberculosis of bones and joints. But just as in the treatment of coxitis we do not hesitate to place a healthy knee into a plaster bandage, so also in thoracoplasty we may also allow the resection of ribs, even though only a portion of the lung is diseased, to extend beyond the diseased part, if we desire to prevent or at least considerably to reduce the respiratory excursions of the lung. The latter are dependent not only upon the movements of the thorax, but also upon those of the diaphragm. Our decision to go so far down, however, depends upon whether the diaphragm is immobilised and drawn up beforehand on account of extensive adhesions between the lung and the wall of the thorax on the one side and the lung and the diaphragm on the other. This condition can be ascertained by means of the Rontgen rays. For the depression of the wall of the thorax the resection of the eleventh rib would scarcely be of importance; but in addition to contributing towards the immobilisation of the diaphragm it will possibly also facilitate its retraction upwards in the thoracic cavity, when the lung tissue shrinks during healing. On the other hand, the tenth rib should always be resected even though the affection of the lung is restricted to the upper lobe; but the length of the piece resected will depend, both as regards the tenth and ninth ribs, upon whether the lower lobe is infected. As far as the following ribs are concerned, I do not believe from what has already been stated with respect to the effect of resection of the posterior portion of the ribs, that it is necessary to resort to the extremely large resections that I made in several of my first cases. For that half of the thorax in which the diseased lung is found is far from empty, and even when the lung shrinks it will occupy a certain amount of space. It is therefore not necessary to aim at a complete deossification of the thoracic wall and obliteration of one half of the thoracic cavity, but a restriction of its lumen, so that the sunken thorax wall closes about the sunken lung, is sufficient. I believe that we can rely with tolerable certainty upon achieving this by resecting about 12 cm. of the tenth and ninth ribs and 15 cm. of the succeeding ribs up to the fourth. But of course due regard must be taken to individual cases. When there is pronounced disease in the upper lobe we must at all costs resect the second and first ribs. One need only look at a skeleton to see how prominent the second rib is in relation to the first, and therefore how requisite it is to have it resected. I further consider that as regards the fourth, third, and second ribs we should not confine ourselves to removing 5–6 cm. as is generally recommended, but even 12–13 cm., and in any case at least 10 cm. The anterior part of the uppermost ribs after resection is not as movable as that of the lower ones, as the rib cartilage is shorter and stiffer and to some degree the seat of calcareous deposits in pulmonary tuberculosis; therefore the anterior ends cannot so easily be pressed back as those farther down, and for that reason we must remove relatively more of those ribs in order to obtain a depression in that region.

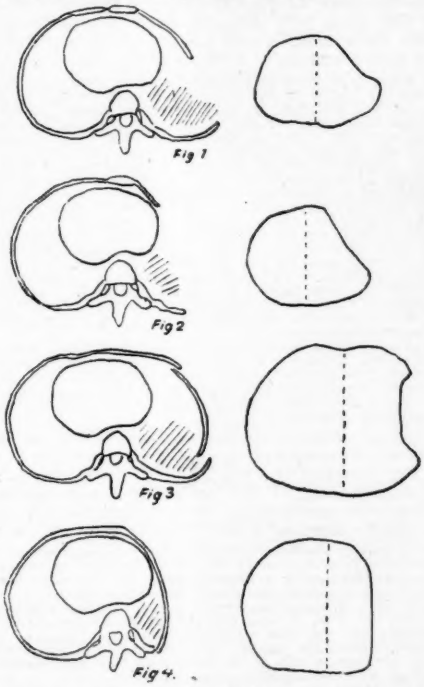

FIG. 1 shows the result of Estlander's operation from a cadaver after resection of five ribs. Effect: Reduction of the circumference of the chest by 4 cm.

FIG. 2, also Estlander's operation upon cadaver, but larger resections than Fig. 1, eight ribs being removed, giving a total of 110 cm. Effect: Reduction of circumference by 5·5 cm.

FIG. 3. Result of E. Quénu's operation. Resection before and behind of a small piece from each of seven ribs. Reduction of circumference 3 cm.

FIG. 4. Boiffin-Gourdet's operation on cadaver. Resection of 6 cm. of nine ribs, in all 54 cm. Effect: 8 cm. reduction of circumference of thorax. One sees how the front end of the resected ribs can be drawn backwards to make contact with the posterior end. The costo-vertebral angle has been almost obliterated.

The scapula is to a large extent the cause of our having to resect the upper ribs also in affections of the lower lobe.

It might perhaps be believed that in an affection of the lower lobe it would be sufficient to resect the lower ribs up to the fourth. But apart from the consideration of the complete immobilisation of the lung, the scapula hinders the success of such a procedure.

For if we remove up to the fourth rib, the scapula will revolve on a frontal axis corresponding to the projecting fourth rib, and thereby the angle of the scapula will be drawn in towards the thoracic cavity. But that depression would be very incomplete, and it is not until the fourth, third, and second ribs have been removed that the scapula in its entirety can be made to fall forwards towards the thoracic cavity. This applies especially to the posterior edge of the scapula, which cannot fall in until all the ribs against which the scapula lies, the second to the seventh and eighth, have been resected. I did not at first resect the first rib, but of late I have done so 15 times, and agree with the majority of surgeons that as a rule this should be done. In cases where there are foci of disease spread over the whole lung but relatively few at the top, good results can be obtained without going farther than to the second rib inclusive. Amongst 15 patients whom I regard as cured in 8 cases the first rib was removed, in 6 cases up to and includi g the second, and in one only up to and including the third rib. The last case in particular is striking, as the patient in question had a cavity of the apex, and yet has been free from symptoms for nearly six years. These results show that a cure can well be achieved without resecting the first rib, but give no proof as to whether I might have achieved even more cures if the first rib had been resected oftener.

Technique Employed by the Author.

Position of patient.—I have employed Sauerbruch's method. The patient is laid on the healthy side with a flat pillow under him, hips and knees bent at right angles, with a pillow firmly fixed to support the back of the thighs; the trunk elevated at an angle of 30°–40°.

Anæsthetic.—In my first operation I employed para-vertebral anæsthesia, and thereby secured ideal effects in spite of the fact that the patient was corpulent. In succeeding operations the effect was not so good, and I have therefore adopted the use of a local anæsthetic of the soft parts by ½ per cent. novocaine, and when the latter have been drawn aside regional anæsthesia of each intercostal nerve with 1 per cent. novocaine.

In doing so it must be remembered that the intercostal nerve behind the angles of the ribs does not lie quite beneath the edge of the rib, but in the intercostal space between the external intercostal muscles on one side and the endothoracic fascia and the costal pleura on the other; for the internal intercostal muscles only begin at the angle of the rib. For the above anæsthesia 200 to 300 c.cm. ½ per cent. and 50–75 c.cm. 1 per cent. novocaine may be used. Each patient receives in addition 0·01 g. morphine subcutaneously one hour before, and, as a rule, another 1 cgr. a quarter of an hour before the operation. In this way it was quite possible to perform the operation without great pain to the patient, although in some few cases, when the patients were more nervous than usual, the effect was not ideal; yet even in the latter cases it was possible to perform the operation without narcosis. In particular, pain is produced when we draw the front part of the rib backwards in order to get it resected far forwards. Even when the local anæsthetic works well the patient often complains of a sense of oppression during this part of the operation.

On the day of the operation the patient must cough as much as he can in the morning so as to clear the lungs of expectoration, so that there is no risk during the operation of an attack of coughing coming on, which could be dangerous by aspiration of sputum in one lung or the other. The position during operation renders expectoration difficult.

Incision.—This commences, when operating in one stage, at the height of the spine of the scapula, about midway between the margin of the scapula and the spinous processes. If it is desired to remove the second rib it may be necessary to go a little higher up. However, the levator anguli scapulæ may very well be kept.

The incision is continued parallel to the spinous processes to the tenth rib and then bends outwards along the tenth or eleventh rib to the scapular line or a little farther. As the arm is drawn outwards and upwards, after cutting through the musculature, one can get right in under the scapula, and with the aid of broad retractors lift it away from the thoracic wall; there is then no difficulty connected with resection of as large pieces of rib as we wish. Resection begins from below, and not until the seventh or eighth rib is reached does the above-mentioned manœuvre with the scapula become necessary.

It is not always easy to say whether the rib before one is the tenth or the eleventh, but I am not alone in being unable to count up to 11 in these circumstances, and must recommend that attention be directed to this point. As a rule, one does not locate the eleventh rib low enough, taking the tenth in the belief that it is the eleventh, until the error is discovered higher up, or it may be only when one has the Rontgen photograph as a guide. On one occasion I made a mistake in counting, because it appeared that a cadaver had not more than 11 ribs on either side. The twelfth was quite rudimentary and not more than 1–3 cm. long.

Through the above incision I have removed as much as 183 cm. of nine ribs in all; in one case 150–160 cm. Friedrich, through the Schede incision, which is far more mutilating for the musculature, removed 130–160 cm.; as far as concerns facility for removing ribs, Sauerbruch's curved incision is not inferior to the other. I have already expressed my doubts as to whether such a huge resection is really necessary at any time. One must aim at getting as far behind the ribs as possible—i.e., to the point of the transverse processes.

After resection of the ribs yellowish-white nodules can, as a rule, be seen through the costal pleura, and by palpation hard nodules in the lung tissue can readily be felt, the size of a grain and upwards to the size of a nut. The pleura is more or less thickened, but by no means so much so as we are accustomed to see in old empyemata. The musculature is sewn together with catgut, the skin with silk.

I have performed the operation in some cases with one, and in others with two assistants. As a rule it lasted one hour. Technically it is considerably easier in women than men, as the ribs are much thinner in the former, and the periosteum and musculature are much more easily separated from the ribs. This is especially noticeable in the posterior part of the ribs, where the iliocostal and longissimus dorsi muscles, and also the deep short rib muscles, have their origin or insertion.

Resection of the two upper ribs.—This is not always simple, especially when dealing with the first rib. This part of the operation can be considerably facilitated if, after resection of the fourth or third rib, we carefully cut through the periosteum and the endothoracic fascia, and then undertake a loosening of the apex of the lung, or regular apicolysis. The lung is thus removed from the ribs, and therefore no risk is run of its lesion during resection of the second and first ribs; in addition the apicolysis contributes per se towards further collapse of the lung.

Drainage.—Since the Gothenburg Congress in 1916 I have followed Dr. Key's example: a glass drain 8–10 cm. long is placed in the posterior angle of the incision, and removed on the first or second day after the operation. In this manner healing undoubtedly proceeds more easily and surely than with the tamponade previously employed by me.

My ten first cases were all operated on in one stage, but from the eleventh all are operated on in two stages, with an interval of seldom more than 2–4 weeks between the first and second stage.

I always have performed the first stage under local anæsthesia, and I then usually resect from the eleventh to the sixth, or, rather, fifth rib; in the second stage the remaining ribs, including the first, are resected. In the last year I have several times performed the second stage under narcosis (ether-chloroform, 3 : 1), partly because many patients are very nervous of the second stage, partly because local anæsthesia is more difficult to establish in the upper part of the chest. When dealing with a large cavity in the apex I hesitate to use general narcosis, fearing lest the contents of the cavity be pressed into the bronchi, from which an unconscious patient will have more difficulty in getting it up.

Intrathoracic transplantation of fat.—Those who have performed these operations will know that cavities in the apex give the greatest difficulty in achieving an entirely satisfactory result. In these cases the momentary effect of thoracoplasty is often strikingly good, but sooner or later profuse expectoration and subfebrile periods may again appear, and the physical signs of a cavity again become more pronounced. Three years ago I drew attention to Tuffier's intrathoracic fat transplantation as a method which in these circumstances should be employed. Since January, 1917, I have employed transplantation of fat in nine patients, in order to cause an obstinate cavity to collapse. I have resected a rib, made an apicolysis and placed fat in the cavity formed between the thoracic wall and the surface of the lung. After having experimented with slightly varying modifications I decided upon the following method.

Patient on back. Pillow under shoulder. Begin at axilla with a longitudinal incision, the lower end of which bends forward, 10–15 cm. in length. The edges of the incision are drawn far apart and I then resect 6–8 cm. of the third or fourth rib, whereby we usually meet with the foremost resection incision from the previous operation. From my experience the second rib should not be selected, as its situation is too difficult from the axilla onwards. One cuts carefully through the periosteum and endothoracic fascia, thus reaching the correct layer for apicolysis—viz., between the parietal pleura and the endothoracic fascia. If we should happen to work in between the two layers of the pleura, this would scarcely be of any practical importance. The danger of opening tuberculous foci is, perhaps, a little greater. It is easiest to loosen first from the lower edge of the wound, and then no farther down than one to two fingers' breadth. Begin to loosen cautiously with a Kocher's probe or some other blunt instrument, later with a finger wrapped in gauze. If in the right layer, the loosening of the apex itself proceeds very easily. Continue to loosen as far upwards as to the first rib and one has then made a cavity the size of a hen's egg or a medium-sized potato. The cavity can be enlarged without difficulty, but it is not advisable, as it is hard to procure a patch of fat sufficiently large to fill it up. The piece of fat should not be too

thick. There is no bleeding worth mentioning, but in order to stop all oozing tampon the cavity and cover the whole wound carefully with sterile gauze.

The fat.—This is best taken from the abdomen by means of a large arc-shaped incision with the convex side outwards. The skin with a quite thin layer of fat is dissected aside to a large extent, so that one can remove the subcutaneous fat with superficial fascia in one connected piece. The size of the piece depends partly upon that of the cavity we have to fill, partly upon the adiposity of the individual. If the latter is only slight, the area of the piece must be made correspondingly greater. In general, the size of the piece varies from that of the palm to that of the entire hand. The fat is kept in a sterile dry compress, whereupon the wound in the abdomen is sewn up with a glass drain at each corner. The fat can also be applied at once to the thorax and the sewing up of the abdomen be postponed until later.

The wound in the axilla is again laid bare, the tampon in the cavity removed, the edges of the wound of the periosteum drawn well away from each other by retractors and the piece of fat pushed into the cavity by means of forceps, and aided by Kocher's spoon. It does not easily slip out again as it finds support against the thoracic wall both above and below the opening of the wound. One endeavours as far as possible to smooth out the piece of fat inside the cavity so that it does not lie like a rolled-up lump, but falls naturally against the walls of the cavity. If the piece is thin it may be necessary to fold it double. In that case I prefer to allow the superficial fascia to turn outwards so that it comes in contact with the endothoracic fascia on the thoracic wall and the parietal pleura outside the lung. The wound is then completely closed in three layers without drainage; first the periosteum with catgut, then the serratus muscle with catgut, and finally the skin with silk. A well compressed bandage is applied to support the wound during attacks of coughing.

In selecting the axilla as the point of entrance instead of the anterior surface of the thorax my reason was first and foremost because a complete apicolysis is far more easily achieved from the axilla.

From the anterior surface it is very difficult to get quite over to the back of the apex of the lung. Moreover, the scar in the axilla is practically invisible. If primary healing does not occur drainage is more successfully carried out at the axilla than in front. Apart from the apicolysis the technique is easier by an anterior incision, and probably asepsis is also more certain, as, of course, perspiration often collects in the axilla. I now have the patient shaved the day before the operation, washed carefully, and left with a ½ per cent. formalin compress throughout the night.

The cough sometimes results in the abdominal wound troubling the patient a good deal. In order to avoid this I have in some cases taken the fat from the outside of the thigh; but this fat has a different character from the subcutaneous abdominal fat, being considerably firmer and therefore adapting itself less readily to the walls of the intrathoracic cavity. For this reason I have returned to the abdomen. The transplantation of fat in these circumstances is not an ideal example of transplantation of tissue, because the transplanted substance must be intimately connected with the surrounding tissue on all sides. The cavity made between the lung and the thoracic wall being completely stiff-walled on the outer side, it is not easy for the transplanted matter to make contact everywhere. This drawback is partly outweighed by the circumstance that the other wall—the lung—can to some extent approach the thoracic wall. Coughing is also a factor which renders difficult the undisturbed healing of the transplanted substance. It might be advisable in cavities in the apex to defer the transplantation of fat to the second stage of the thoracoplasty, apicolysis being performed at the same time. The cavity would just after resection be surrounded by more pliant walls, making it easier for the transplanted tissue to come into contact with healthy tissue on all sides.

As far as the further fate of the transplanted fat is concerned Tuffier's investigations have shown that in aseptically healed cases it is converted into firm, fibro-adipose tissue.

Of the 9 intrathoracic fat transplantations which I have performed, healing has been achieved in 5 cases. I am certain, however, that this does not give a correct impression of the success of the method.

Three of the operations were unfortunately performed at a time when there was in my wards a series of infections, the cause of which could not be traced. It was particularly unfortunate that three so comparatively rare operations should have taken place just at the period of the only "hospital epidemic" I have ever experienced. A fourth case now goes about with quite a small sinus in the axilla. In the other five patients, healing took place either primarily or after a brief evacuation of viscous fluid containing a great percentage of fat. The latter must to some extent be regarded as a proof that the transplanted tissue did not entirely fill up the artificially made cavity. If the formation of a sinus should occur, the bandage should be so laid as to compress strongly, upon which the secretion in aseptic cases soon ceases. The effect of fat transplantation in four cases was splendid, cough and expectoration disappearing almost entirely. In one case considerable improvement occurred.

Course of Disease and After-treatment.

When operating in one stage the first part of the operation, until the sixth or fifth rib is reached, usually proceeds with normal pulse and respiration, but during the resection of the upper ribs both often increase considerably in frequency; the pulse may rise to 140–160 and the respiration to about 40. Shortly after the operation, and sometimes before its completion, the pulse often goes down to 110–120 and the respirations to 20–30. In some cases the pulse did not exceed 80–90 and the respirations 28–30, in spite of a large resection.

Some patients suffered from nausea and vomited during the operation, which I consider to be the effect of the morphine and novocaine. At the conclusion of the operation nearly all the patients could sit upright on the operating table whilst the bandages were being applied. Even just after the conclusion of the operation it is possible to see a considerable sinking in of the thorax wall in connexion with "paradox respiration." The mobilised thoracic wall is drawn in at each inspiration and bends outwards at each expiration. Dyspnœa and laboured expectoration, with pains in the breast radiating to the arm, especially trouble the patient during the first days after the operation. The dyspnœa is partly due to "mediastinal flutter," partly to poor action of the heart on account of dislocation. The heart must, as it were, grow accustomed to the latter before resuming its regular work. In one case in particular the dyspnœa was pronounced on account of mediastinal flutter; pulse 130, resp. 36–40. There was considerable cyanosis and the patient's condition was grave. The more she exerted herself the more pronounced was the dyspnœa and the less favourable did the pulse become. Omnopon 0·02 subcutaneously had a wonderful effect. The patient grew quiet, pulse became slower, and respiration steadier, and she again fell asleep. Narcotics were not spared, and after some days the crisis was passed.

Expectoration.—Narcotics must be given during the first days. It is of the greatest importance to get the patient to cough up the sputum; pain connected with coughing must therefore be prevented. I prefer omnopon, which seems as a rule to work better than morphine.

The patient must at first have an extra nurse day and night, especially to support the affected side during attacks of coughing, and to encourage the patient. Coughing is considerably eased by support of that part of the thorax mobilised by the operation (Sauerbruch's bandage, plaster bandage), but care must be taken that the means of support employed will not compress the other half of the thorax, and thereby hinder it during respiration. The bandage also has another purpose—viz., to help press the mobilised part of the thoracic wall in against the thoracic cavity, so that the requisite inward pressure of the thoracic wall is secured when the ribs are regenerated.

One striking feature is the influence of the operation upon the amount of sputum.

In most cases it sank even during residence in hospital from more than 150 c.cm. per 24 hours to 25–50 c.cm. In one case it entirely disappeared, and in some others almost so. Sometimes the amount of sputum entirely disappeared in the course of the two or three months following the operation. As a rule a rapid decrease in the amount of sputum is a good prognostic sign, yet not always. In one of my cases after resection of the eleventh to fifth ribs there was a rapid and considerable decrease in the amount of sputum, from 90 c.cm. to 6 c.cm. in the course of four weeks, and for that reason I refrained from resecting the other ribs. Ten months later I had to resect the fourth to second ribs, whereby the amount of sputum, which had again risen to 175 c.cm., sank to 10–15 c.cm. Yet even in that case I did not achieve a sufficient collapse of the apex of the lung in which there was a cavity. The patient refused further operations, and a few days after departure had a fatal hæmoptysis. Yet even in cases where the final result is unsatisfactory the operation often effects a temporary reduction in the amount of sputum.

Even when the amount of sputum rapidly decreases—i.e., in the course of two to four weeks—the decrease is irregular, so that only within a certain period can a steady diminution be proved. As the amount of sputum diminishes the tubercle bacilli in the expectoration also disappear. This was the case with nearly one-half of my patients, in one case as early as seven weeks after the operation. Simultaneously with decrease in expectoration the cough naturally, wholly or partially, disappears, this being the point most appreciated by the patient.

Temperature, pulse, and pain.—In the succeeding days there is often a rise in temperature, in favourable cases somewhat moderate, 37·4°–38·5° C., lasting not more than 4–5 days. The pulse rises relatively more and remains at 110 to 120–130 for several days. In other cases the temperature may rise above 39°, the pulse to 130–140, and yet primary healing of the wound may take place. In these cases both rise in temperature and high frequency of pulse are a result of pulmonary complications. High temperature up to 40° or above, and frequency of pulse 120–140, which show no signs of descending in the following days, give an unsatisfactory prognosis.

I have already mentioned that during the first few days the patient often complains of severe pains in the operated half of the thorax, pains which often radiate to the arm and down to about the elbow. These pains usually decrease considerably shortly afterwards, but may continue, even if less intense, for weeks and even months. After the lapse of a few days the patient usually feels better, and the large wound grows together surprisingly quickly, so that he can often get up after two to three weeks, and can be sent away for continued sanatorium treatment after four to six weeks. In some cases the reaction after the one-stage operation is great;

after my tenth case I preferred to carry out the operation in two stages. This division entails the disadvantage of the patient's vivid recollection of the first operation when he comes to have the second; one runs the risk of his refusing to submit to it. I hasten to add that I have never met with a refusal.

But in favourable cases the patient recovers quickly after the operation, appetite and weight increase, temperature falls to the normal, cough diminishes, and his improved subjective condition puts him in better spirits. Some patients even have a decided conviction that the disease has released its hold on them.

The operated side of the thorax falls in considerably, so that the edge of the scapula is visible from in front. With the aid of the cyrtometer a decrease in the circumference of the operated side of 5-6 cm. or even more can be demonstrated. In several of my patients it has been found that the diminution in chest measurement was more marked under the armpit than at the tip of the xiphoid process. We can distinctly feel how the anterior ends of the resected ribs approach the posterior ends, so that the distance between them diminishes from 12-15 cm. to 5-6 or 3-4 and even less. At the same time, the foremost extends downwards, so that, for instance, the anterior end of the seventh rib is opposite the posterior end of the eighth.

With women the breast slips to the side and the nipple often points at an angle of 45° (the sagittal plane), whilst otherwise it only deviates 10-15° outwards from it. In the course of time scoliosis in the corresponding part of the spinal column develops; this scoliosis is the reverse of that found in empyemata, the convexity being towards the diseased side, presumably because in operating large or small portions of the long muscles of the back are cut or paralysed, so that the muscles of the other side draw the spinal column over. The mobility of the arm is at first restricted on account of pain, but it returns by degrees unless the scapula has been completely fixed. On the whole, it can be said that the lasting inconveniences are small.

Showing the result of thoracoplasty in a female patient, 19 years old, after the second operation. Note the diminution in volume of the left half of the thorax, the compensatory scoliosis, and the perfect mobility of the arm.

Signs Indicative of Success of Operation and Progress of Cure.

Complications in the opposite lung or other organs may render difficult an estimation of the effectiveness of the operation. But in addition to the usual clinical symptoms, pulse, temperature, amount of sputum, disappearance or persistence of tubercle bacilli, physical condition of the lung, and general condition, Rontgen pictures will be of great importance in enabling changes in the lung, especially the condition of cavities, to be followed.

Not one symptom only, but the entire aspect of the case, must be taken into consideration. I have mentioned that the amount of sputum may temporarily disappear almost entirely after the operation, but that this disappearance does not necessarily mean that a cure has taken place. Estimation of the physical signs may be very difficult after the operation. If before the operation there were more or less distinct signs of a cavity, it will be found in favourable cases that the moist sounds or bronchial breathing are by degrees replaced by crepitations. But all abnormal sounds do not disappear, and amphoric breathing, presumably produced by the larger bronchi, may continue permanently or for a long time. Even in the most fortunate cases normal conditions in the lung will of course never be recovered. The percussion sound will remain flat and at certain places slightly tympanitic, at points almost dull; the respiratory murmur will be rough or tubular on account of the large uncollapsed bronchi that run through collapsed pulmonary tissue, and may be heard more or less extensively, because both the lung itself and the thoracic wall have lost their elasticity, thus more or less preventing the lung from being rid of sputum. Scanty expectoration without tubercle bacilli in connexion with the above-mentioned physical changes can therefore not be regarded as of any importance, as soon as general condition, temperature, and pulse point towards a decided improvement.

Discussion of the Indications.

The first case was referred to me by Dr. W. Holmboe, chief physician at Mesnalien Sanatorium for Pulmonary Tuberculosis; he therefore has the honour of being the first in Norway to give indications for the operation of these patients. All the following patients have also been referred to me by the physician treating them at their respective hospitals or sanatoriums.

No doubt it is agreed that there can only be a question of operating in a case of unilateral pulmonary tuberculosis, which in spite of rational treatment either grows steadily worse or remains practically stationary for a long time. In both cases the patient's general condition is reduced by fever or constant coughing, with more or less abundant expectoration. It is then important to operate before the patient is too much reduced by the disease. As the effect of extrapleural thoracoplasty may be compared with the effect of treatment by pneumothorax, both producing collapse of the diseased lung, and as further inflation must be regarded as considerably less dangerous, I have generally demanded that pneumothorax treatment shall have been attempted without result, or that it was not feasible on account of extensive pleural adhesions.

Thus, on the whole, it may be said that indications for extrapleural thoracoplasty coincide with indications for artificial pneumothorax treatment, and that the former is utilised when the latter cannot be carried out. The extent of the infection in the diseased lung must have reached a certain stage before so serious an operation should be undertaken. An advanced destructive process with the formation of cavities inclines one to intervene earlier than when the tuberculosis, assuming a more fibrous form with shrinkage, runs a chronic course.

Condition of the other lung.—The requirement that the other lung must be healthy must not be understood to mean that in the event of post-mortem examination no tuberculosis would be found in it.

So strict a demand would mean few operations. By "healthy" in these cases is meant that either no affection in that lung is, or has been, clinically demonstrable, or even though at one time there was some affection it has disappeared. It, however, is more difficult to judge those cases, which perhaps are most frequent, where insignificant changes can be demonstrated in the better lung. In one of my cases which resulted in death we were unable to find any definite signs of disease in the "healthy" lung just before the operation, and yet a cavity the size of a nut was subsequently found in the upper lobe. Some of my patients showed no clinical signs that the other lung was attacked.

Other Symptoms and Contra-indications.

There may also be other symptoms to consider in deciding whether to operate or continue expectant treatment. I have here specially in mind repeated hæmoptyses, and also, perhaps, shrinkage, with marked dislocation of heart and trachea, as factors in favour of operating.

Contra-indications for operating are advanced disease in the other lung or tuberculosis in the lower lobe of the other lung, also other localisations of tuberculosis (kidneys, intestines, bones, joints, &c.) in addition to the usual contra-indications that hold good for all large operations. A slight laryngeal tuberculosis has not kept me from operating, as I considered that an eventual improvement in the pulmonary tuberculosis, with decrease of cough and sputum, would exercise a beneficial influence on the laryngeal tuberculosis, almost like that of the improvement in tuberculosis of the bladder after removal of the diseased kidney.

In order to decide the various factors which I have here mentioned it is absolutely necessary for the patient to be for a considerable time under the observation and treatment of a competent physician. The latter alone can decide whether the disease is stationary or progressive. He is best qualified to predict the result of continued expectant treatment, so far as that is feasible in pulmonary tuberculosis. On the other hand, the surgeon must not perform operations "to order." Because even though pulmonary diseases, and especially pulmonary tuberculosis, do not, as a rule, fall within our special province, the surgeon must use his common sense when deciding whether the patient can bear the operation, and he must have most to say in the choice of method and arrangement of the operation.

Results.

From May 1st, 1914, to June, 1919, I performed 37 extra-pleural thoracoplastic operations in pulmonary tuberculosis; in the last year I have performed a further 11. Of my first series of 11 patients 3 died immediately after the operation; of my second series of 26 patients only 1 died. The immediate mortality was thus reduced from about 30 per cent. to 4 per cent., or for all the cases to about 10 per cent. I ascribe this extremely remarkable improvement in the statistics principally to the performance of the operation in two stages.[1] As regards the four deaths, three of them were undoubtedly due to infection. Clinically it was remarkable that in spite of the high temperature there was a clean and moist tongue the whole time.

The immediate and lasting results of my operations will appear from the following table:—

Results of Operations (37 Cases).

Years.	No.	Men.	Women.	Died after operation.	Living.		Died later.	
					Able to work.*	Tuberculous.	Of pul. tuberc.	Other causes.
1914	5	1	4	—	2	—	3	—
1915	4	2	2	2	—	—	2	—
1916	4	1	3	1	—	2	1	—
1917	14	3	11	1	7	4	1	1†
1918	6	4	2	—	3	3	0	—
1919	4	1	3	—	3	1	0	—
Total.	37	12	25	4	15	10	7	1

* Free from symptoms. † Influenza-pneumonia.

Seven patients died subsequently of their tuberculosis, one nearly four years after the operation. One died of influenza-pneumonia one year after the operation. It is doubtful whether her tuberculosis had been cured. Twenty-five still live. Of these, 15 may be considered as cured; they are entirely, or practically, fit for work, always afebrile, and tubercle bacilli can no longer be demonstrated in the sputum. They have no daily cough, but some of them, as might reasonably be expected, are more liable to temporary colds than other people. Ten live, with symptoms of their pulmonary tuberculosis.

So far, then, I have obtained a curative result of tuberculosis in 15 of the 33 patients—i.e., about 45 per cent. of those who survived the operation, or 40 per cent. of the total number operated on. Time will show if this calculation is too optimistic. I take it to be a good sign, however, that two of the 1914 patients are still well. Amongst the patients there are several who cycle—against my advice—and one has hard manual labour for as many as ten hours a day. Two women and one man have married. One of the women, exactly one year after the operation, gave birth to a child, which weighed 4 kg., and 15 months later gave birth to a second. She scrubs her floor, does all her own housework, and feels quite well.

Conclusions.

A critical study of the 18 cases which were not so satisfactory leads me to the following conclusions:—In 3 cases the operation was incomplete; in 2 because at first I lacked sufficient experience, and in the third because the patient's general condition before the operation was so poor that he could not bear it, and it therefore had to be interrupted and left incomplete. It may be fitting to observe here that extrapleural thoracoplasty is too large an operation to be made *consolationis causâ*. If there are no reasonable chances of a good result one should refrain from operating, as to do so can only tend to make the operation unpopular with medical men and public alike. All the three patients with incompleted operation subsequently died of tuberculosis. One patient died of influenza-pneumonia; she, however, was hardly cured of her pulmonary tuberculosis. In 10 cases the other lung became diseased, in one case after influenza, which is to be blamed for aggravation of the complaint in several other instances, to some extent with hæmoptyses. Four patients had a temporary improvement, but nevertheless do not recover satisfactorily in spite of the fact that the other lung still appears to be healthy. Coughing and expectoration persist, in some cases with tubercle bacilli, in others without. Two of these patients have also suffered from nephritis. In one case the result was better after transplantation of fat and treatment at a sanatorium. The sword of Damocles that overhangs the patient is the danger that the other lung may become diseased. We cannot expect to obviate this danger, and it can only be reduced by a lengthy stay at a sanatorium after the operation, and careful choice of occupation later. Sport and hard work should be forbidden for life, even in the best cases. On the other hand, it is not always clear why certain patients do not recover entirely in spite of good technique, and in spite of the fact that the other lung is not involved. It is possible that this may be connected with thickening of the pleura which prevents the lung from collapsing sufficiently. Future observation may perhaps solve this problem for us. I believe that by improvements in technique and greater practice in prognosis early in the disease, so that cases suitable for operation come for surgical treatment at an earlier stage, better results will become possible.

The results that I have given are to a great extent due to the friendly coöperation of various sanatorium physicians, who from the beginning showed an understanding of the importance of extrapleural thoracoplasty. But frequently, when I have talked to other colleagues about thoracoplasty and pulmonary tuberculosis, I have been met with the objection that the operation is too dangerous and that the speaker has "no faith in it." One should always listen to expert criticism, but it has been found that the views mentioned above are based upon lack of personal experience and upon ignorance of what has been achieved. Against this negative criticism I desire to make a protest by the publication of my results. I can confidently assert that those patients who are well are all most grateful. It must be remembered that they are people who in many cases have been ill for a long time, having in some instances gone from one physician to another or from one sanatorium to another, and having little by little come to the conclusion that nothing can cure them. After an operation attempted as a last resort they feel that the power of the disease is broken, and the ability to enjoy life has returned. Their gratitude is therefore not difficult to understand.

Summary.

My experience of extrapleural thoracoplasty in pulmonary tuberculosis may be summarised as follows:—

1. In unilateral, or mainly unilateral pulmonary tuberculosis, which is not cured by rational treatment (including pneumothorax), good results can be achieved by means of extrapleural thoracoplasty.

2. The operation should only be performed after conference with the physician treating the patient, who must have had an opportunity, by observation during a considerable period, of forming a thorough opinion of the prognosis in the case concerned.

3. Resection of the ribs should be carried out under local anæsthesia through a paravertebral incision, so that the posterior part of the ribs from the eleventh, or, in any case, from the tenth to the first inclusive, can be removed.

4. If a cavity remains, it can be brought to collapse by means of intrathoracic transplantation of fat.

5. It is necessary that practising physicians should acquire knowledge of the indications and results of extrapleural thoracoplasty. One has now no right to withhold the chance of operation from suitable patients.

[1] Of the last 11 patients one died immediately.

SUGAR IN THE BLOOD:

A MICRO-CHEMICAL METHOD OF ESTIMATION.

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THE present paper deals with a micro-chemical method of estimation of the sugar-content of the blood which we have tried and perfected. For some years one of us (R. L. M. W.) has devoted much time and labour to the study of blood analysis, particularly with reference to sugar in the blood. A method of analysis, which has since proved to be as reliable as the present method, was devised in 1910, but was eventually discarded when I. Bang introduced his micro-chemical method. It, however, served its purpose in that one was able to appreciate the value of such an analysis in every case of glycosuria and in diseases affecting carbohydrate metabolism. In 1913 Bang's method was adopted, since it enabled one to estimate sugar in a small quantity of blood obtained from the finger—a less unpleasant process for the patient than the removal of a quantity of blood from a vein. Many hundreds of blood analyses have been made by this method, with invaluable results. The technique of the Bang method having been mastered and its numerous pitfalls avoided, it was naturally abandoned with reluctance. In 1919 O. Otto Folin and Hsieu Wu[1] published an account of their methods of blood analysis and detailed a method of blood sugar estimation which at once arrested attention. The method was, however, full of fallacies, and so we tried to adapt it to the Bang method. Having satisfied ourselves of these fallacies, we were not surprised to see that Folin and Wu had come to similar conclusions when they published their second paper dealing with improvements in the method.[2] As a result of combination of these improvements with a number of our own estimations and comparison with the Bang method, we have devised the following micro-chemical method. In the latter we are in agreement with Folin and Wu that it approaches as near to perfection as any method of blood sugar estimation so far devised.

Method of Obtaining Blood for Estimation of Sugar.

The estimation of the blood sugar-content of the patient involves a simple prick of the finger, and gives rise to no more inconvenience than an ordinary routine blood examination. This is advantageous in many ways, since it can be carried out on persons of any age or temperament and under any ordinary circumstances. We prefer to weigh a few drops of blood with a reliable torsion balance rather than to use small-sized pipettes of doubtful accuracy. The finger is thoroughly cleansed with ether or alcohol and the blood issuing from the prick of a needle is absorbed on to special pieces of blotting-paper, which have been previously weighed on the torsion balance. The pieces of paper are cut to size and when thoroughly soaked with blood are weighed again. This second weighing must be carried out as rapidly as possible to avoid drying of the blood; with a good torsion balance this is not a difficult matter. With a little experience it is found that about 150 mg. can be absorbed on to each paper. The weighed paper and blood is now inserted into a small test-tube and 3·6 c.cm. of distilled water added. This amount of water just serves to cover the paper and to extract all the sugar from the blood. The extraction should be allowed to proceed for not less than half an hour and not more than 45 minutes. At room temperature and with this interval of time extraction is complete, and there is no danger of loss of sugar from glycolytic ferment action. The proteins and other interfering substances have now to be removed, and this is carried out by means of the tungstic acid precipitation method devised by Folin and Wu. To the tube containing the blood paper and extract 0·2 c.cm. of sodium tungstate solution (10 per cent. strength) is first added, followed immediately by 0·2 c.cm. of a two-third normal sulphuric acid solution. The mixture at first assumes a red colour and rapidly changes to brown with the formation of a dense precipitate. It is then filtered through starch-free filter-paper, and the resulting filtrate is watery clear and should be practically neutral in reaction. The sugar in this watery clear solution is then estimated in the following way.

Method of Estimation of Sugar in the Tungstic Acid Extract.

The estimation depends upon the property of the glucose present to reduce an alkaline copper solution to cuprous oxide, and the production of a deep-blue coloured compound by chemical interaction between the cuprous oxide and a solution of phosphomolybdic acid. The latter reagent not only combines with the cuprous oxide, but also destroys all the blue colour of the unreduced alkaline copper solution. We can thus estimate the amount of glucose present by comparing the colour produced with that developed by a known standard glucose solution.

Apparatus.—The following reagents and apparatus[3] are required, in addition to the torsion balance, absorbing papers, and extraction test-tubes mentioned above.

(1) A good colorimeter, preferably the Kober instrument.
(2) Boiling-tubes of resistance-glass graduated to hold 12·5 c.cm. and 25 c.cm., the lower end of the tube being provided with a bulb of 4 c.cm. capacity and with a constriction immediately above 2 cm. in length and not more than 8 mm. in diameter.
(3) Absorbing papers (starch free) of sufficient size to hold about 150–200 mg. of blood, with steel clips for suspending the paper on to the torsion balance.
(4) Small tubes to hold the papers and the extracting fluid.
(5) Two burettes of 2 c.cm. capacity divided into 1/50ths, with double-bore stopcocks for holding (*a*) a 10 per cent. solution of sodium tungstate; (*b*) a two-thirds normal solution of sulphuric acid.
(6) Burette of 10 c.cm. capacity to hold distilled water.
(7) Boiling water bath.
(8) Pipettes of 2 c.cm. capacity for delivery of: (*a*) Alkaline copper solution made as follows: water, 400 c.cm.; anhydrous sodium carbonate, 40 g.; tartaric acid, 7·5 g.; crystalline copper sulphate, 4·5 g., dissolved and made up to 1 litre. (*b*) Phosphomolybdic acid solution, prepared as follows: 35 g. of pure molybdic acid are dissolved in 200 c.cm. of a 10 per cent. solution of sodium hydrate and 200 c.cm. of water added. The whole is now boiled for 20–40 minutes to remove all traces of ammonia which may be present in the molybdic acid. Cool and dilute to about 350 c.cm. with water and then add 125 c.cm. of phosphoric acid (85 per cent. strength), and water to 500 c.cm.; 2 c.cm. of this solution when added to 2 c.cm. of the alkaline copper solution should produce complete decolorisation. (*c*) Stock solution of glucose to be used as standard. A 1 per cent. solution of pure glucose preserved with a few drops of toluol. For use 1 c.cm. of this solution is diluted up to 100 c.cm. with distilled water.

For estimation of the sugar, 2 c.cm. of the watery clear blood extract and 2 c.cm. of the copper solution are placed in one of the special boiling-tubes. To another tube add 2 c.cm. of the diluted standard sugar solution and 2 c.cm. of the copper solution. Both tubes are thoroughly shaken and then placed in a vigorously boiling water bath, and allowed to remain for six minutes. They are then removed from the bath and treated at once with 2 c.cm. of the phospho-molybdic acid solution. A deep blue colour appears in both tubes. The contents are then diluted with water up to the 12·5 c.cm. mark, thoroughly mixed, and compared in the colorimeter. The standard solution is set at say 20 mm., and the height of the unknown solution is read off when the colour on the two sides exactly matches. The colour is so striking that it needs very little practice to obtain consistent readings.

Calculation.—The calculation of the amount of sugar in the blood is carried out as follows:—

Weight of paper and hook = 250 mg.
" " " + blood = 360 mg.
∴ Weight of blood taken = 360 − 250 = 110 mg.

[1] Folin and Wu, Journ. Biol. Chem., 1918, xxxviii., 106.
[2] Ibid., 1920, xli., 367.

[3] The apparatus can be obtained from Messrs. Gallenkamp, 19-21, Sun-street, Finsbury-square, London, E.C.

With the standard set at 20 on the colorimeter scale the reading of the unknown solution is 25. Now the 2 c.cm. of standard solution of sugar contains 0·2 mg., and so the amount of sugar present in 2 c.cm. of the blood extract =

$$\frac{\text{the reading of the standard} = 20}{\text{the reading of the unknown} = 25} \times 0{\cdot}2 \text{ mg.}$$

—i.e. $\frac{20}{25} \times 0{\cdot}2 = 0{\cdot}16$ mg. But the amount of blood equal to 2 c.cm. of the extract =

$$\frac{\text{the amount of blood taken} = 110 \text{ mg.} \times \text{amount of extract used} = 2 \text{ c.cm.}}{\text{amount of extracting fluid added to the blood} = 4 \text{ c.cm.}}$$

(3·6 c.cm. water, 0·2 c.cm. sodium tungstate, 0·2 c.cm. ⅔rds $N.H_2SO_4$) = 55 mg.

$$\therefore \text{Percentage of sugar} = \frac{0{\cdot}16 \times 100}{55} = 0{\cdot}292.$$

The result indicates that in such a case there is a marked hyperglycæmia, as the normal values range between 0·08 and 0·110 g. per cent.

The method of estimation is simple, and after numerous trials we have come to the conclusion that the results are as accurate as it is possible to obtain. The micro-chemical method described above possesses so many obvious advantages that it is unnecessary to detail them here. For an ordinary blood-sugar analysis three samples of blood are obtained, separately estimated, and an average of the three taken. The differences observed are generally so slight as to be almost negligible, as will be seen by the following figures:—

Samples.	(1)	(2)	(3)
I. Blood normal	0·098	0·099	0·100
II. „ glycosuria	0·2	0·212	0·23
III. „ „ of pregnancy	0·128	0·128	0·129
IV. Blood diabetes mellitus ...	0·266	0·263	0·260
V. „ „ „ ...	0·393	0·416	0·400

All these results have been obtained from samples of blood removed from the finger at least two hours after breakfast, and represent the so-called "starving" blood sugar. In comparison with the Bang method and the method of Folin and Wu we find that the results closely correspond, the latter method giving perhaps slightly higher results. The micro-chemical method above described has been found to yield identical results with those obtained by the macro-chemical method of Folin and Wu, the samples of blood from the finger and the 10 c.cm. of blood from the vein being collected within a few minutes of one another. It is the purpose of this paper to detail the method of estimation of blood sugar; a further paper is in preparation dealing with results obtained in a large number of cases. These include many types of glycosuria as well as other conditions where a disturbance of carbohydrate metabolism is suspected. The use of individual blood-sugar estimations, as well as complete tests for glucose tolerance have been tried in many of these cases with striking results. The value of such observations has already been established by various workers. We are convinced that the use of the method described above will be productive of good results, and that it will become a routine procedure in most laboratories. The secret of success in biochemistry is the possession of really reliable methods which give results from which definite conclusions may be drawn. One of us has tried many of the methods for estimation of blood sugar, including the Lewis Benedict method and its modifications, the MacLean method, and the modified Bang methods. These give quite good results, but there is no doubt that the original Bang method is one of the most reliable. We now have a new method which gives even more accurate results, and has the further advantage of being time-saving and even less liable to error than the Bang method. On these grounds we have no hesitation in recommending the method of Folin and Wu and the micro-chemical application of this method as now described. The whole subject of micro-chemical blood analysis is at present receiving attention, as is also the micro-chemical analysis of the carbohydrate content of normal urine.

Conclusions.

1. The micro-chemical method, based on the method of Folin and Wu, provides an accurate, reliable, and rapid method of estimation of blood sugar.

2. It enables an analysis of the blood to be made with very little inconvenience to the patient, as also the determination of the glucose tolerance, and yields results of importance both as regards diagnosis, prognosis, and treatment.

RELAPSING FEVER:

AN ACCOUNT OF A SERIES OF 125 CASES, WITH SPECIAL REFERENCE TO THE PALESTINE TYPE.

BY W. K. CALWELL, M.D., D.P.H. BELF.

DURING 1917 and 1918 I had the opportunity of studying 125 cases of relapsing fever among British and New Zealand troops at the 27th General Hospital, Cairo. Sixty-nine cases were of the Egyptian or North African type and 56 of the Palestine type. The North African cases occurred mostly among troops in Lower Egypt, and the course of the disease was similar to that described by Sandwith,[1] Balfour,[2] and others as occurring in Egypt and the Sudan. The initial fever lasted 4 to 7 days, and spirochætes were comparatively easily found during the pyrexial period. A relapse was frequent 6 to 12 (usually seven) days after the end of the primary attack; a second relapse was not uncommon, but a third was rare. The average number of relapses in my series was 1·35, and the average duration of patients in hospital from the onset of the disease till their discharge to a convalescent depôt was 40 days. Intravenous salvarsan in 0·6 g. doses given in pyrexia or shortly after the initial fever prevented relapses in all cases. Complications were few. Ten had moderate bronchitis, two had definite pneumonia, one on the eighth day of the primary attack developed maniacal delirium, requiring four orderlies to restrain him. Morphine, gr. ½, was given and 0·6 g. kharsivan intravenously the next day. The following day his temperature was normal, his mind quite clear, and he made a successful recovery. There were no deaths in the 69 cases, but the mortality varies considerably in different epidemics. Kuelz[3] gives an interesting account of an epidemic among Germans and Turks on the Persian front and Roumanians in Macedonia and Serbia. Only one German died, but 8 per cent. of the Turks, and Roumanians in large numbers—up to 60 per cent. in some units. Weiner[4] described 226 cases of relapsing fever in Southern Albania in the autumn and spring 1916–1917 with a mortality of 17·7 per cent.

The Relapsing Fever of Palestine.

This type, which had not been previously described, first came under my notice in November, 1917, and corresponded with the time our troops entered into Palestine. Up till October, 1917, the troops were living in the Sinai desert. Here they lived in bivouacs in the blazing sun, exposed to the sand and glare, with a very limited water-supply. Dysentery was common, but relapsing fever, typhus, and malaria not prevalent. The conditions of life changed completely after the Gaza-Beersheba battle in October, 1917, which led to the capture of Jerusalem and the freeing of all Southern Palestine. Our men then occupied the Maritime Plain, around the orange groves of Jaffa, the Judæan hills, Jerusalem, and a little later on Jericho and the Jordan valley, well below the sea level, with its terrific heat and pestilential climate. The men welcomed a change from the desert, but it was not to "a land flowing with milk and honey" that they came, but to one devastated by the Turks and occupied by dirty folk living in filthy, lice-infested villages. The conditions were even worse later on in the great victorious advance in September, 1918, when Haifa, Damascus, Beyrout, and the whole of Syria right up to Aleppo was occupied.

The occupation of this unhealthy area, together with the continuous wearing of the same clothes without opportunity for washing, consequent on the men being perpetually on the move, predisposed them to relapsing fever and typhus fever, and both these diseases soon were noted again. The symptoms and course of the relapsing fever, however, were quite different from the

Egyptian type of the previous year and from that described by Sandwith.

Fifty-six cases of this type were admitted to hospital from November, 1917, to November, 1918. The maximum incidence was from December till April, and no cases were admitted during the summer or autumn months.

	No. of cases admitted.		No. of cases admitted.
November, 1917 ...	2	March, 1918...	9
December, ,, ...	10	April, ,, ...	8
January, 1918 ...	20	May, ,, ...	1
February, ,, ...	6	June to October, 1918	0

Symptoms.

The onset was, unfortunately, not seen at the base hospital, and its course is judged by the history of the aching pains all over the body, and the patient looks and feels acutely ill. The temperature soon reaches its maximum, and the relapse seldom lasts 48 hours (usually 18 to 24 hours). (See Charts 1, 2, and 3.)

Slight jaundice, often merely conjunctival, was noted in 25 per cent. of my cases. The crisis is accompanied by profuse sweating and occasionally diarrhœa, and in some cases is followed by profound collapse, though this responds readily to restoratives. A second apyrexial interval is followed by a second relapse similar to the first; the number of relapses varies considerably, and as many as 13 occurred in two of my cases. The later relapses may be quite as severe as the earlier and the temperature may be higher, though the general distress is almost as bad with a lower temperature of 101° or so.

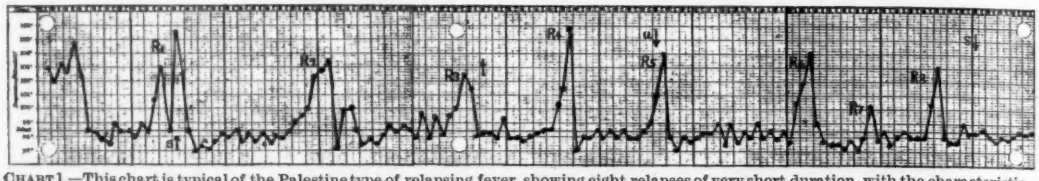

CHART 1.—This chart is typical of the Palestine type of relapsing fever, showing eight relapses of very short duration, with the characteristic spiky temperature and short interval between the relapses. The first injection of salvarsan (0·03 g.), and later eusol injection (50 c.cm.), were of no effect in preventing relapses. A further dose of 0·6 g. salvarsan was successful.
S ↑, Intravenous salvarsan injection. R, Relapse. †, Admission to 27th General Hospital. u ↓, Intravenous eusol injection.

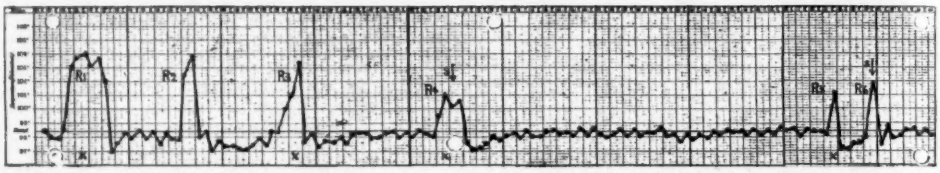

CHART 2.—This patient gave a history of recurrent B. T. malaria. Onset was 11 days before admission to the base hospital; spirochætes were present as indicated, and it required two doses of 0·6 g. salvarsan to stop relapses. Note the irregular intervals between relapses, varying from 5 to 27 days in this case.
X, Blood film positive for spirochætes of relapsing fever.

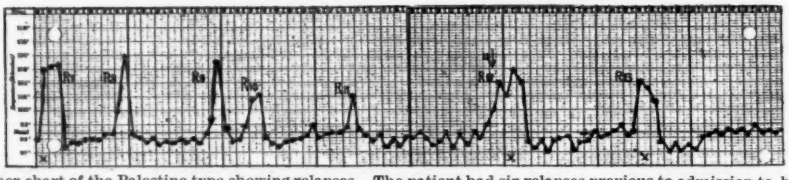

CHART 3.—Another chart of the Palestine type showing relapses. The patient had six relapses previous to admission to base hospital as malaria. His blood examination was negative previous to admission, but he had been on quinine treatment for over a fortnight.

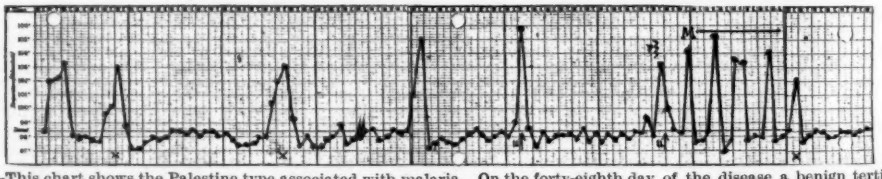

CHART 4.—This chart shows the Palestine type associated with malaria. On the forty-eighth day of the disease a benign tertian attack occurred. This was mistaken at first for a recurrence of the relapsing fever, but B. T. parasites were found later, and the attack responded quickly to quinine treatment. r §, Rigor.

patient and by any notes and charts which accompanied him. The symptoms of the initial fever resemble those of the North African relapsing fever. Pain over the liver is more frequent and the organ is more often enlarged, while enlargement of the spleen is the exception. The initial fever is considerably shorter than in the North African type, lasting 2 to 4 days and ending by crisis.

The cases were usually admitted to the base hospital shortly after the initial fever, and often with a diagnosis of malaria or pyrexia of uncertain origin (P.U.O.). After an apyrexial interval of usually 5 to 14 days, during which the patient has a feeling of well-being and often grumbles at being kept in bed, the temperature rises rapidly to 100°–106° F. (usually 103° F.), with all the symptoms of the initial attack. There is a definite rigor, with severe headache and sometimes vomiting.

The average number of relapses in my cases was 4·5, as compared with 1·35 in the North African type of the previous year; and treatment by kharsivan undoubtedly cut short the number in several of these cases. The apyrexial intervals were very irregular and, unlike the North African type, there was little tendency to a regular periodicity, the intervals tending to become longer in the later relapses, but not invariably so. Afebrile periods lasted from 2 to 27 days; but it was seldom that a relapse occurred after 14 days, and still more seldom after 21, and no patient was known to have a relapse after he had been afebrile for more than 27 days. Nearly every case was kept under observation in hospital until the twenty-eighth day of apyrexia.

Spirochætes were found in all cases at some stage of the pyrexia, but were few and far between; and usually could only be found after searching several

fields of the slide, or after examination of several slides. The pathologist to the hospital (Captain H. W. Crowe) reported a tendency to curling of the spirochætes and to figure-of-eight and circular forms, but a diagnosis as to the type cannot be made on morphological grounds.

Animal Inoculations.

Major N. Hamilton Fairley, pathologist to the 14th Australian General Hospital, found characteristic features in the blood of this type.

(1) An increase in the total leucocytes.
(2) A constant rise of the large mononuclear elements.
(3) Spirochætes difficult to find on account of their rarity.
(4) Leucocyte count: average 13,000 per c.mm. during relapses.
(5) Differential blood count:—

Polymorphonuclear cells ...	57·3	Eosinophils	0·6
Lymphocytes	26·3	Basophils	0·4
Large mononuclear cells (hyaline and transitional)	15·4		100·0

A constant and marked feature was the presence of an increase in the large mononuclear cells, differing entirely from the relapsing fever of European type. Morphologically no distinctions were found between the spirochætes in the Palestine type and those of the European type.

Intravenous injection into monkeys of citrated blood taken from a typical case during relapse resulted in infection, spirochætes being demonstrated as late as seven days thereafter. The temperature charts indicated a quite atypical course in monkeys and one corresponding remarkably with the irregular clinical picture of the Palestine type.

Convalescence is usually slow, and should not be hurried through nor too lightly regarded. From the onset of the disease till discharge to the convalescent depôt the average number of days was 64, as compared with the North African type, in which the average was 40 days. General debility, anæmia, and tachycardia were frequent sequelæ, but nearly all the patients were finally discharged as fit for service in the field.

The *complications* noted were (1) pneumonia—definite consolidation in one case, and in two others pneumonic symptoms with very few physical signs; (2) facial paralysis in two cases; (3) jaundice—severe jaundice in one case with hæmatemesis and death on the forty-third day. This patient had been afebrile for three days previous to his death, and was the only fatal case of relapsing fever in the hospital. The disease was associated with malaria in four cases and with bacillary dysentery in one.

Differential Diagnosis.

This is based on (*a*) detection of spirochætes in the blood, (*b*) clinical course of the disease.

(1) *From African tick fever.*—There are many points in common, but the Palestine type is not so severe a disease. Vomiting is less prominent, splenic enlargement, dysentery, and eye complications much less common, and there are no local inflammatory symptoms. The Palestine type occurred during the cold season, whereas the African tick fever is usually absent from the colder parts of tropical Africa.

(2) *From malaria.*—This type closely simulates malaria, and many of the cases were diagnosed malaria previous to admission; the sudden onset with rigor, accompanied by profuse sweating and a previous history of malaria, together with in some cases an enlarged spleen, were very suggestive of malaria. In many of my cases the patients had been treated with oral or intramuscular quinine before the diagnosis was made. This shows that the medical officers in field ambulances and in the lines of communication had often been misled by the clinical symptoms. (See Chart 4.)

The points to be noted are: Presence of spirochætes or malarial parasites in the blood. The relapsing fever patient is more acutely ill, has more vomiting, more liver pain, less splenic pain, and the fever paroxysm lasts longer, 18 to 48 hours. There is the absence of tertian periodicity, less anæmia is induced, and effects of treatment are different; quinine controlling the fever in malaria, but of no effect in relapsing fever. An important point is that mononuclear increase is the rule in this Palestine type; consequently an increase in mononuclears, so often found in chronic malaria, is apt to mislead.

(3) *From trench fever.*—This disease was uncommon in Palestine. The type of fever may closely resemble relapsing fever. Blood examination is negative in trench fever and shin pains common. The charts may bear a close resemblance to one another.

(4) *From typhus and typhoid fever.*—These diseases may resemble relapsing fever at the onset. On the first day the examination of the blood for spirochætes is the most important aid to diagnosis. If they are found the diagnosis is established forthwith; if they are not found the examination should be repeated, several times if necessary. Should repeated search fail to reveal spirochætes in the blood other tests should be made, such as Widal, Wilson, Weil-Felix, and W. Löwenthal's agglutination reaction for relapsing fever. Later on the distinctive rashes of typhus and typhoid fever appear. In relapsing fever the onset is more sudden, the fever acme is reached earlier, and jaundice, vomiting, and epigastric tenderness are more common. The pupils are not contracted as in typhus, and the tongue differs, being cleaner, and even if dry is easily protruded. There is leucopenia in typhoid, leucocytosis in relapsing fever. I had a good opportunity of studying the diseases at the 27th General Hospital, Cairo, among our own troops, and also at the Egyptian Government fever hospitals at Cairo and Khartoum among Egyptian soldiers and civilians. The rash in the natives is not at all easy to differentiate, as in addition to the darkened skin there is often a mottling which is quite natural to them. The modern diagnostic methods ought, however, to assure an early diagnosis.

(5) *From pneumonia.*—The difficulty may arise in the first day or so before the physical signs are clear. The character of the pain, the absence of spirochætes, the more marked leucocytosis, and the common labial herpes point to pneumonia.

(6) *From cerebro-spinal fever.*—The onset of relapsing fever with cerebral symptoms, stiffness of neck, and delirium may give anxiety, but blood examination, lumbar puncture, and subsequent course soon decide.

(7) *From rat-bite fever.*—This interesting disease was first recorded in England by Horder,[5] who saw a spirochæte in the blood of one case. Points of resemblance to relapsing fever are the sudden onset with rigor and the varying apyrexial intervals followed by relapses somewhat like the Palestine type. There is a history, however, of rat-bite with local inflammatory symptoms, and eosinophilia is present. Recent Japanese workers[6] have found the disease to be caused by the *Spirochæta morsus muris*.

(8) *From dengue or seven days' fever.*—This is distinguished by the absence of spirochætes, the slow pulse, the presence of leucopenia, and of a rash measly or scarlatiniform in character. Relapses do not occur, but there is often a remission about the third day.

(9) *From Weil's disease.*—Relapsing fever complicated by jaundice may resemble Weil's disease, as the cause of this latter disease has been shown by Inada and other Japanese workers[7] to be due to a spirochæte—the *Spirochæta icterohæmorrhagica*.

Prognosis.—Only one death occurred in the 56 cases under observation, but the disease is rather debilitating, and cases are often protracted unless treated with salvarsan.

Treatment.

(1) *Prophylactic.*—As the disease is conveyed by parasites, systematic antiparasitic measures, including personal cleansing of the patient, and also of his clothing and bedding, are indicated. General cleanliness and other hygienic measures should be attended to, and localities where lice and ticks abound should be avoided if possible.

(2) *Symptomatic.*—The use of salicylates and aspirin were of value for relief of the pain. In my experience quinine was disappointing in controlling fever and reducing the pain. Morphia may be occasionally necessary for severe pain or delirium. Cold-sponging is very soothing for the higher temperatures. Collapse at the crisis may frequently require energetic treatment by stimulants. The diet during the fever should be chiefly fluid—milk, milk puddings, beef-tea, &c. A generous diet is to be encouraged during apyrexia and convalescence.

(3) *Specific.*—Kharsivan was given in 28 of my cases. In 15 of these no further relapse occurred; of the remaining 13, 7 were cured after a second dose. On the lines of communication it was thought 0·6 g. kharsivan was too much for an acute case of relapsing fever on account of the sudden freeing of toxins from the spirochætes. Consequently smaller doses, 0·2 or 0·3 g., were given. These may have been safer, but were not so effective in preventing relapses, and the best results were obtained from a full dose of kharsivan (0·6 g.) in pyrexia or soon after the crisis. The temperature often dropped to subnormal, but no case gave cause for any real anxiety. Only 4 cases had any relapse after 0·6 g. kharsivan. Eusol, 50 c.cm. intravenously, mostly in pyrexia, was given in 17 cases of the Palestine type, but 10 had further relapses. The results from eusol were not satisfactory and were later

discontinued. During convalescence careful supervision should be made with regard to tobacco and exercise on account of the tendency to tachycardia. Graduated exercises were often of much value in these cases.

There is considerable scope for the further study of this disease, and especially with regard to the infective agent. It has been suggested that an artificial disease is produced by giving small doses of salvarsan insufficient to cure the disease, but causing marked changes in the blood and antibodies. This is negatived by the fact that I had several cases of this type which received no salvarsan treatment at any period, and one of these cases had 13 relapses. There is recent evidence to show that the tick *Argas persicus*, which is common in Palestine, may be the infective agent. This tick is found in the cracks in the floors and walls of the mud-built villages, and it has been shown to be the cause of a relapsing fever in Cilicia and Persia; and it may also prove to be the carrier in the Palestine type. My observations have necessarily been founded on a comparatively small number of cases, but from the consistency of symptoms presented I feel justified in assuming that in relapsing fever, as met with in Palestine, we have a distinct clinical entity.

My best thanks are accorded to Major W. T. Ritchie, R.A.M.C. (T.), O.B.E., late Divisional Medical Officer, 27th General Hospital, for the kindly interest he took in these cases and for the encouragement he gave me to write this paper.

Note.—Since writing the foregoing I have seen an article on Tick Fever in Palestine, in which Nicholson[9] gives a description of the Palestine type of relapsing fever and in which he brings forward some further evidence that the disease is tick-borne. Fourteen men gave a history of having been bitten by tick-like insects, and these on investigation were found to belong to the genus Argas, most probably *Argas persicus*.

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PELLAGRA AND THE PELLAGRA PSYCHOSIS.

A STUDY OF 757 INSANE EGYPTIAN PELLAGRINS.

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AND
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IT has unfortunately been found impossible to obtain any definite statistics relative to the amount of pellagra in Egypt, and it is for this reason that we are placing on record the numbers of pellagrins admitted to this hospital from the various provinces. These numbers, it is hoped, will supplement the much quoted figures published in the annual reports of Dr. John Warnock, Director of Lunacy in Egypt. It had better be pointed out here that our figures include all cases admitted showing signs of pellagra, however mild and fleeting such signs proved to be during the residence of the patient in hospital, and irrespective of the fact that the attack of insanity may not have been ascribed to pellagra in past years. If, in the absence of statistics from the Public Health Department, our figures will help to indicate the areas chiefly affected they will serve some useful purpose. According to White,[1] pellagra in Egypt is believed to be distinctly on the increase. The cases now referred to are recorded in the registers of the Khanka Mental Hospital, and it is here only fitting to acknowledge our indebtedness to the director, Dr. H. W. Dudgeon, for permission to publish the figures, and to record our thanks for his interest and encouragement.

Since this hospital was opened on Jan. 1st, 1912, 2738 certified male cases have been admitted for treatment, and of these, 757, or 27·6 per cent., showed signs of pellagra on admission. This total has been made up as follows: 1912, 69; 1913, 48; 1914, 121; 1915, 75; 1916, 69; 1917, 119; 1918, 134; 1919, 77; 1920 (first quarter), 45 = 757.

Distribution and Age Incidence.

As many of these cases were admitted indirectly through the parent hospital at Abbassia and were in residence there for varying periods of time, no deductions can be made from these figures. Below are tabulated the numbers from the various provinces of (1) Lower Egypt, and (2) Upper Egypt. One case was received from the Western Desert. The figures for the four large towns—Cairo, Alexandria, Port Said, and Suez—are shown separately, and a word may be said here as to their significance or rather their lack of significance. No patient whose home is in Cairo is admitted to Khanka—that is to say, that such patients as figure under Cairo have only been temporarily resident there and have their homes in the provinces. Many of those coming from the other three towns are undoubtedly similarly placed, for it must be borne in mind that natives, especially those of Upper Egypt, not infrequently desert the country for the town in search of employment, especially during the summer months.

(1) *Lower Egypt.* (2) *Upper Egypt.*

(A) Population (Census, 1917). (B) Pellagrins admitted. (C) Per 100,000 of population.

Province	(A)	(B)	(C)
El-Qalyubiya	265,612	61	22·9
El-Sharkia	471,847	95	20·1
El-Gharbiya	814,296	139	17·0
El-Menufiya	536,953	69	12·8
El-Dakahlia	503,598	56	11·1
El-Beheira	435,000	32	7·3
	3,027,306	452	14·9

Province	(A)	(B)	(C)
El-Giza	266,025	33	12·4
Beni Suef	229,544	26	11·3
Asyut	494,462	30	6·0
El-Fayum	254,859	15	5·8
Girga	432,787	25	5·7
Qena	427,736	24	5·6
El-Menia	386,732	20	5·1
Aswan	116,559	4	3·4
	2,608,704	177	6·7

In the *large towns and Western Desert* 128 pellagrins were admitted as follows: Cairo, 75; Alexandria, 40; Port Said, 8; Suez, 4; Western Desert, 1.

With a total of 757 cases, pellagra, then, as has been noted frequently elsewhere, seems to be less firmly rooted in Upper Egypt. From the above figures it would appear to be only half as frequent as it is in Lower Egypt. Marie[2] holds that this is due to the dryness of the atmosphere in Upper Egypt and to the fact that the natives there use millet in place of maize.

Age has never been considered a very strong predisposing factor in pellagra. According to Wood,[3] Merk places his greatest number of pellagrous cases between 40–50 years of age. Roberts[4] puts the average age as 35, and says that by far the larger number of pellagrins are between 20–40 years of age. With this latter statement we are in full agreement, but his average age is high when compared with the following figures: under 20 years, 110; 20–30, 301; 30–40, 207; 40–50, 96; over 50, 43 = 757. Roberts reminds us on the same page: "It is true that the average age of pellagrins in any state is lower than the average age of the insane pellagrins in the asylums of that same State." Bearing this in mind, it is worthy of note that 508 of the above cases, or 67 per cent., were actually insane in the third and fourth decades. A further analysis of these two decades yields the following results: 20–25 years, 167; 25–30, 134; 30–35, 117; 35–40, 90 = 508. That is to say, a steady decline in numbers from the first half of the third decade. We are told by White[5] that in an investigation carried out some years ago in a country district of Egypt, where pellagra was known to be very prevalent, the most marked feature noted was the presence of pellagrous symptoms in young adults, especially boys. Add to this that, according to Roberts,[6] no less an authority than Sandwith considered puberty in boys a vulnerable time for the pellagrous attack. May it not be, then, leaving the insane altogether out of account for the present, that the average age of any number of pellagrins gives but little indication of the time of commencement of the initial pellagrous attack, especially in the case of a disease which is chronic and subacute rather than acute in its

course. We are of opinion that pellagra, as a rule, makes its initial attack about the age of puberty.

Occupation as a Predisposing Factor.

As regards occupation as a predisposing factor, American students of pellagra differ from most European writers on the subject in that they do not find the agricultural classes affected to the same extent. Niles[7] says that in America, especially in the south, occupation has shown but scant influence. In Egypt, as indicated below, pellagrins are chiefly derived from that large class of agricultural labourers, the fellahin. The figures are: fellahin, 420; vagrants, 98; occupation unknown, 79; porters, labourers, 51; artisans, 41; students, clerks, 29; shopkeepers, 12; soldiers, police, 10; sailors, fishers, 9; servants, 8 = 757. Thus 420, or 55·4 per cent., were definitely drawn from agricultural areas. Probably Roberts[8] is right in maintaining that pellagra exerts a preference for those who live in the country or in a rural environment, and this without reference to occupation. "Environment," he says, "rather than occupation is the predisposing and determining factor."

Let us now turn our attention to the condition of our patients on arrival. As such cases are generally received in the later stages of the disease it is interesting in passing to note the location of the erythema. Merk's table[9] showing the backs of the hands as the principal site of the erythema may be correct for pellagra in general, or pellagra in the earlier stages, but we are convinced that erythema on the dorsal aspects of the feet is equally prominent in the later stages, at least in a country such as Egypt, where the fellahin wear neither sock nor shoe, or if the latter a shoe that does not cover the dorsum of the foot. Wood[10] says that the lower extremities are rather infrequently the seat of pellagrous erythema. However true this may be of America, it is certainly misleading of Egypt. The figures are: feet, 350 cases (46 per cent.); hands, 305 (40 per cent.); elbows, 217 (29 per cent.); knees, 154 (20 per cent.); neck, 153 (20 per cent.); face, 55 (7 per cent.). Odoardi's statement[11] that the erythema does not appear on the feet until the disease has existed three or four years, though not now accepted as wholly true, may not be so far wrong in the sense that the disease has generally existed some time before erythema makes its appearance on the feet. It is as well to add here that bilateral enlargement of the parotid glands was noted in 78 cases, or 10·3 per cent. The attention of one of us was directed to this matter by Dr. Dudgeon, the director here, as far back as 1912.

Mental Condition.

The mental condition of the various cases just prior to admission is interesting as regards the display of (*a*) suicidal, and (*b*) dangerous tendencies. It should be noted that this is a picture of the mental condition at the time of certification, and as such is more accurate than one drawn during residence in hospital. Most alienists will agree that patients, neither suicidal nor dangerous while under observation, may prove to be either or both when placed in their normal surroundings. Of the total number of cases the figures as regards suicide read as follows: suicidal, 202 (27 per cent.); not suicidal, 363 (48 per cent.); doubtful, 192 (25 per cent.) = 757; while the figures as regards those said to be dangerous are: dangerous, 432 (57 per cent.); not dangerous, 189 (25 per cent.); doubtful, 136 (18 per cent.) = 757.

As has been pointed out above, these details have been taken from the medical certificates of the patients, and give us the impression of the local practitioner at the time of certification. Perhaps the tendency to suicide is not as marked as has generally been stated. As a matter of fact insane pellagrins, once in hospital and taken as a group, are not regarded by alienists as being either determinedly suicidal or highly dangerous to others. Taken individually there are, of course, exceptions.

Let us now consider the various groups into which these cases were classified on admission: acute confusional insanity (amentia), 320; mania, acute, recurrent, febrile, 115; melancholia, simple and recurrent, 113; dementia, 103; imbecility, 28; adolescent insanity, 26; drug insanity, 26; epileptic insanity, 23; general paralysis of the insane, 2; returned not insane, 1 = 757. Thus 320 cases, or 42 per cent., fall directly under heading of amentia, the typical psychosis of the earlier stages. The word typical is used advisedly. The time is now ripe for a definite classification of these cases. Even 81 of the 115 cases classified on admission under mania, and 86 of the 113 cases classified on admission under melancholia, prove, from subsequent examination of their histories, to fall under the one heading—amentia of Meynert. Thus the percentage of cases in this group reaches the high figure of 64·5 per cent. The 103 cases entered as suffering from dementia represent patients in the still later stages of the disease. Dementia is the terminal mental condition. For example, of the 69 cases admitted in the year 1912, 13 were discharged, 31 died, while of the 25 who remain in hospital all are demented. We take our stand by Tanzi, who says[12] of the pellagra psychosis: "It is an intermittent and progressive amentia, which, if not cured, or not early fatal, terminates in dementia." Babcock[13] is quite as definite: "In the first attack the pellagra psychosis is an amentia (confusional insanity). In the latter and progressive phase, marked by chronic and incurable cachexia, it is a dementia." And Wood[14]: "A case of pellagra during the inter-eruptive period removed from a pellagrous locality might tax the resources of a psychiatrist for a while, but the probability is that the record would show the diagnosis of amentia of Meynert in the majority of instances." The remaining cases speak for themselves. Patients will always continue to present themselves with pellagra superimposed on some other mental condition, chiefly the hereditary states.

Subsequent History.

Now let us look for a little into the subsequent history of these cases: died, 240 (32 per cent.); discharged, 359 (47 per cent.); remaining, 158 (21 per cent.) = 757. As regards mortality Roberts tells us[15] that the asylum cases in America have had a mortality of between 40 and 60 per cent. He publishes figures from the Georgia Asylum, showing a death-rate of 29 or 48 per cent. for 60 cases, while the Bryce Hospital, according to Wood,[16] shows a death-rate of 66 per cent. for 27 cases, and the Mount Vernon (coloured) Hospital a death-rate of 57 per cent. for 210 cases. Here in Egypt, then, the death-rate does not appear to be so high. No doubt the disease is more acute in America than elsewhere at the present time. The mortality there may be expected to decrease as the years pass by and as the disease assumes a more chronic form. As regards those able to be discharged, the statement of Allbutt[17] that when a case of pellagra reached the asylum stage it was practically beyond recall, and that there were few exceptions to this rule might, at first sight, appear rather severe, yet when the discharge figures are analysed they give the following disappointing results: recovered, 100; relieved, 246; not improved, 13 = 359. The word recovered is to be taken as meaning recovered from the attack. There can be no proper permanent recovery unless the pellagra is permanently cured. Out of a total, then, of 757 cases, only 100, or 13·2 per cent., were able to be discharged as recovered. The duration of residence in hospital of these cases proves that recovery from the mental attack takes place fairly rapidly, if at all: under 6 months, 75; 6–12 months, 15; 12–18 months, 10 = 100.

If Wood is correct in saying[18] that the probable outcome of the ordinary types of pellagra will be insanity, then the prognosis in general is bad, and the dictum of Dr. Dudgeon, the director here, "Once a pellagrin, always a pellagrin," is not far off the mark for all such cases as are not cured before the asylum stage is reached.

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THE OPERATIVE TREATMENT OF CONGENITAL DEFORMITIES OF THE LOWER URINARY TRACT,

WITH SPECIAL REFERENCE TO THE FORMATION OF A "COMPRESSOR URETHRÆ."

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AMONGST the most distressing of congenital abnormalities must be included certain malformations of the lower urinary tract. An account of five cases forms the basis of this paper, and reference may be made to a sixth case, which was published in 1919.[1] The first case is one of epispadias, the second and sixth are cases of ectopia vesicæ, the third, fourth, and fifth are cases of hypospadias.

The Case of Epispadias.

CASE 1.—The subject of this deformity is a boy, aged 16. Apart from his deformity he is a well-made active boy. He has suffered from incontinence of urine ever since he was born, and was constantly dribbling and wetting himself and his clothes. Examination reveals the following conditions: The scrotum is fully formed; both testicles are present and fully descended; the penis as regards body and glans is fairly well formed, but there is no meatus on the glans nor trace of a urethra in the usual position. There is a wide shallow groove upon the dorsal surface of the penis which leads above into a hole, which is obliquely placed rather to the left of the middle line. From this hole urine is constantly passing. The region shows traces of previous operations, which were performed at another hospital. Above the penis and on the extreme lower and front part of the abdomen there is a wide shallow groove, at the bottom of which there appears to be some scar tissue and a considerable thinning of the skin and subcutaneous structures. On either side of this shallow groove there is an inconspicuous but broad ridge, due in its upper part to the rectus abdominis muscle and in its extreme lower part to the body and inner part of the pubes on each side.

X ray examination reveals the important fact that the pubes are not united across the middle line; there is a gap of fully 2 inches between these two portions of bone, which otherwise appear to be fully developed. The bladder is present, and is capable of holding 5 oz. of 20 per cent. potassium bromide solution.

A consultation had been held at the other hospital which he had attended, and it was decided that nothing more could be done for the boy. In some way Mr. W. H. Trethowan came across the lad, and sent him to me. He was admitted under my care in Astley Cooper Ward, Guy's Hospital, on May 20th, 1920. Although strong and healthy-looking, he was in a most distressing condition, constantly wetting the bedclothes and his garments. He was most anxious that something should be done, and was willing to undergo any treatment which might be directed to the relief of his unfortunate condition. (Fig. 1.)

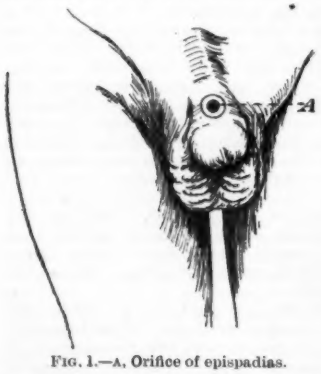


FIG. 1.—A, Orifice of epispadias.

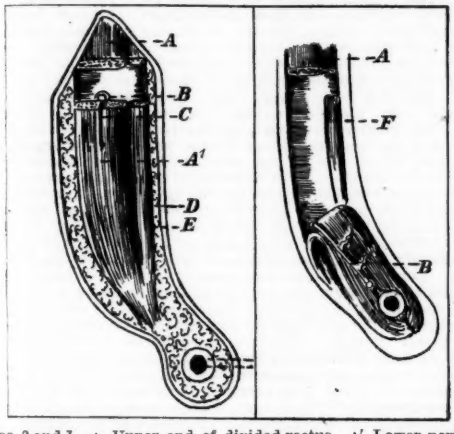
The first consideration which came up for discussion was whether or no we should transplant his ureters into the bowel. This operation has been done with great success by Sir Harold Stiles, but personally I felt the boy's lower urinary tract was septic. This was, perhaps, not unassociated with the general cutaneous upset which accompanies puberty. I did not care to expose his peritoneal cavity to possible sepsis, and, if it were so, with an inevitably fatal result. It is, perhaps, not impossible that the musculature which is associated with the normal urethral passage is present in this lad, although he had, strictly speaking, no urethra. And it occurred to me that careful dissection in the perineum might reveal the presence of a compressor urethræ, through which an opening might be made into the bladder, and a new urethra constructed. On the other hand, the chances of finding a compressor urethræ of any value were remote, and, if found, the added difficulty of forming a new urethra had to be considered. If the patient was to be cured of his distressing condition it was necessary that something should be done to enable the patient to live more comfortably. The difficulty was to establish a compressor which should control the passage of urine from the bladder. It then occurred to me that perhaps one of the recti abdominis might be used for the formation of a compressor to the orifice of the epispadias. The obvious remark which will be made in reply to this suggestion is that by transplanting the rectus a hernia would be sure to result. This theoretical objection certainly carries weight, but one or two points in connexion with the production of hernia after the removal of the rectus also occurred to me. First, there is no reason why the lower portion of one rectus should not be lifted out of its sheath and divided in the region of the umbilicus; the proximal portion of the rectus could be sutured to the sheath, and the sheath itself be sutured after removal of the rectus. Instead, then, of the muscle above the pubes there would be a broad ligamentous band, which would be kept broad by the other muscles of the abdomen pulling on it laterally, and which would be kept taut above by the remaining portion of the rectus. Secondly, there was no reason to fear that much scar tissue would be developed, and if only a little scar tissue developed there would be then no reason for the production of a hernia.

The next step was to study that portion of the rectus which lay below the umbilicus. Mr. T. A. Shore, student demonstrator of anatomy at Guy's Hospital, very kindly dissected the rectus for me; Professor F. G. Parsons gave information of very great value, and I made one or two dissections myself. From these three sources of information certain facts relative to the nerve- and blood-supply of the rectus emerged, and are of great practical significance. First, Mr. Shore's dissection showed that the twelfth dorsal nerve supplies the lower two-thirds of that portion of the rectus which lies below the umbilicus. There are two terminal branches which are formed near the outer edge of the rectus and which pass, one upwards, the other downwards, into the substance of the muscle. Professor Parsons's and Mr. Shore's observations confirmed the supposition that the ilio-hypogastric nerve does not supply the lower end of the rectus. The important fact, from the surgical point of view, is that the lower portion of the rectus could be dissected away from its sheath, without even the surgeon seeing its nerve-supply, much less damaging it. Secondly, the arterial blood-supply was important. The deep epigastric passes behind the rectus muscle towards the umbilicus. It lies within the sheath and is adherent rather to the muscle than to the sheath. It gives off numerous small branches, which course transversely inwards, and enter the muscle. Thus it appeared that the rectus was an admirable muscle for the purposes of transplantation as regards its nerve and arterial blood-supply.

There were other factors in my choice of this muscle. Of course, it lay near its proposed new site; but, in addition, it may be said that the rectus is constantly in action as one of the abdominal muscles, and if more force than this were necessary to maintain compression of the orifice of the epispadias it could be produced by forcible attempts at flexion of the trunk without producing any very obvious movement which might draw attention to the patient's desire to hold his water. An operation for transplanting the rectus around the orifice of the epispadias was undertaken on June 5th, 1920. The usual preliminary preparation of the patient was made, and Mr. H. C. Rook administered the anæsthetic. A circular incision, 1 inch in diameter, was made round the orifice of the epispadias and carried deeply into the cavernous tissue of the penis. There was some bleeding, but nothing to cause anxiety. The incision was deepened for about 1½ inches around the epispadias opening. The general direction of the deepening of the incision was upwards and backwards, parallel with the direction of the urinary passage. An incision was then made, starting above at the level of the umbilicus, which, curving inwards below, terminated in the upper right quadrant of the first incision. (Figs. 2 and 3.) The superficial fascia and deep fascia were divided, and care was taken to carry the incision below to a depth as great as that of the original circular incision. The anterior wall of the rectus sheath was exposed and incised vertically, and the anterior surface of the rectus muscle was laid bare. The muscle was divided transversely at a level of 1 inch below the umbilicus; no effort was made to look for the twelfth dorsal nerve, which, in fact, was never seen, and the lower part of the right rectus was lifted out of its sheath and turned

[1] British Journal of Disease in Children, June, 1919.

downwards and forwards. The inferior attachment of the rectus was not touched. There was some retraction of the muscle, but considerably more so of the epigastric artery after it had been divided and ligatured. Incidentally, it may be mentioned that in this case the lower portion of the right rectus was double up to the level of the umbilicus, and I regret I did not notice this point until the whole of the two parts had been divided. The inner part, serving no useful purpose as a compressor, was sutured to the upper remaining part of the right rectus. The outer portion, which was twice as broad as the inner part, was alone turned over and placed so as to lie comfortably in the curved lower part of the vertical incision and in the incision round the epispadiac orifice. It measured about 4 inches in length, its upper divided end became its lower end, and its original posterior surface became its anterior surface. The cut end of the muscle was split longitudinally for a distance of



FIGS. 2 and 3.—A, Upper end of divided rectus. A', Lower portion of divided rectus. B, Deep epigastric artery. C, Rectus longitudinally split. D, Superficial fascia. E, Skin. F, Inner portion of rectus.

of 1 inch in the mid-line of the muscle. The two ends were placed one on each side of the orifice and surrounding tissue and sutured to the tissues round the orifice and to each other. One portion therefore of the split muscle lay above and to the left, and another portion of the muscle lay below and to the right of the orifice. There was thus a muscular band fixed securely round the orifice of the epispadias. The upper portion of the divided rectus was sewn to the sheath, and the edges of the divided sheath were sutured securely together. In accordance with the general rule which I have elsewhere laid down, the part of the rectus muscle which had been turned over was buried as deeply as possible by means of sutures applied Lembert-wise to the fat and subcutaneous tissues of the edges of the wound. The skin was then sewn up and dressings applied, and the patient was returned to bed. It was a most fortunate thing that the rectus was buried deeply, for a staphylococcal infection occurred, but was confined to the edges of the wound, and the rectus muscle was never seen, nor apparently was it affected by sepsis at any time during the dressing of the case.

At the end of three weeks the patient was holding his water whilst in bed for one and a half hours, and when he micturated directed the stream with considerable force forward. When he got up, however, his urine dribbled away from him. The opening of the urinary orifice is tightly closed, and remains closed in bed unless he desires to pass his water.

On June 27th, that is 22 days after the operation, Sister Astley Cooper found it possible to collect and record the quantity of water passed by the patient, a thing which before the operation was quite impossible. The patient was allowed up on Friday, July 16th, and told me next day that he had gone into the lavatory to pass his water after holding it for one and a half hours. On July 18th I saw the patient in Guy's colonnade at 10.20 A.M., and he told me he had held his water since 9.0 o'clock, that is, for 80 minutes. I took him into the lavatory and he passed water with a good stream. I feel it may be necessary to perform another plastic operation for him, to give him a urethra, as at present he passes some of his water over the scrotum. This, however, is a small matter compared with his previous great discomfort, and testifies to the excellence of the rectus muscle in its new position and in its new function as compressor urethræ.

Summary of the Case.—1. The patient is, generally, well-formed and healthy. 2. He had continuous dribbling, and was a source of trouble to himself and his friends. 3. He was suffering from epispadias or *congenital penile fistula* of the bladder. The opening of the fistula was always patent. 4. A compressor of the orifice was necessary. 5. The lower part of the right rectus abdominis was chosen because: (*a*) it was adjacent to fistula; (*b*) it had a convenient nerve and arterial blood-supply; (*c*) it could be turned down and split and placed around the orifice without the nerve- or blood-supply being damaged; (*d*) the muscle is constantly in action, but can be put out of action; (*e*) very little obvious movement would be produced by forcible action of the muscle in order to retain water in the bladder when necessary. 6. The operation devised has been most successful and gratifying in its results.

July 27th, 1920: The patient holds his water all night and micturates when he desires during the day. He shows no sign of hernia. Oct. 9th, 1920: Patient still holds his water well.

The Case of Ectopia Vesicæ.

CASE 2.—O. S., aged 5½ years, admitted to Guy's Hospital March 7th, 1920. Apart from the congenital deformity, the patient is a fully-developed, healthy little girl. There is a well-marked ectopia vesicæ, which forms a marked protuberance over the lower part of the abdomen. The pubes on each side are widely separated from each other. Below the ectopia there are, on each side of the middle line in the perineal region, two ruddy protuberances, the lower two larger than the upper two. These clearly represent the labia majora and minora on each side. The patient is constantly wet. The orifices of the ureters are clearly visible on either side of the middle line, and close to the lower edge of the mucous membrane of the extroverted bladder.

For the relief of this condition the following operation was performed on March 17th in Queen Ward at Guy's Hospital. An incision was made round the edge of the extroverted mucosa, close to its junction with the skin. The edge was dissected upwards and centrally for about ¼ inch; the extroverted bladder was pushed back into the abdominal cavity, and the edge of the mucous membrane of one lateral half of the circumference was united to the edge of the mucous membrane of the other lateral half, except below, where, deliberately, a small orifice was left unsutured. A small incision, continuous with that previously performed, was then made on each side of the middle line, through the centre of each of the small upper swellings, which represented the labia minora. The inner edges of these incisions were turned inwards after slight dissection, and united across the middle line. Thus a bladder and urinary passage and orifice was formed. The edge of skin around the bladder region was dissected upwards and outwards, so as to expose the rectus and its sheath on each side. These were partially drawn together with catgut sutures, upon which, when they were tied, there was no tension. A series of sutures, applied Lembert-wise, were inserted into the raw area now left between the newly-constructed bladder and urethra and the edge of the skin laterally. Some of the sutures were passed in part through sheath and muscle of both recti abdominis. These sutures were wider above than below. When tied there was no undue tension upon them, and a broad area of subcutaneous tissue was united on each side. The edges of skin of the abdominal wall and outer edge of the skin on the labia minus on each side were united together. No catheter was passed in the bladder: it was felt that drainage would be ample. Anchor dressings were applied, and tension on the sutures following upon the child struggling or crying was prevented by the use of Mead's strapping applied broadly and wide of the sutures so as to put tension on and draw together the skin lying on each side. The patient was dressed twice during the next three weeks, a fact which speaks volumes for the care and attention bestowed by Sister Queen and her nurses. At the end of the three weeks all the sutures were removed and there was union along the whole area of operation, except just at the lowest part of the wound. Further consideration as regards treatment was postponed until the tissue of union had thoroughly consolidated. The patient has at present no control over micturition. I have suggested to myself the introduction of a bag made of indiarubber into the patient's bladder, and the distension of the bladder by leading a tube into the bag and blowing it up. But, in view of the first case, of epispadias, which has been recorded in this paper, I am inclined to try another transplantation of the right rectus. If I do, I may adopt two modifications at stages where, I think, mistakes were made in the compressor operation. I may unite the turn-down upper end of the rectus to the pubes of the opposite side, having slit it as before, and brought the two portions round the urinary orifice, and I shall tie the deep epigastric artery before I cut it, and suture the proximal end at once to the lower edge of the divided rectus as it lies in its usual position and before

it is turned down. I am also waiting, as in the sixth case, that of F. S.,[2] there was evidence that the child had control to a certain extent after a precisely similar and successful operation. Case No. 2 has, of course, incontinence, but at present this is a small matter compared with the proper consolidation of the parts, and I do not propose to do anything further just yet.

These two cases—Nos. 1 and 2—may be considered together. The proper consideration of the first case gives the key to the complete treatment of the second case, and shows that a bladder having been constructed a compressor may be formed by transplantation of a portion of the rectus which is intact as regards its nervous and vascular supply. It may, perhaps, have been noted that in the description of the cases which has been given the word "urethra" has never been used. As I have attempted to show in the previous paper which has been quoted, the groove on the dorsum of the penis, forming the condition of epispadias, is not a representative of the urethra at all; it is due to, and indicates the double character of, the embryonic genital eminence which, in the normal type of cases, is single. The single-grooved penis, which is formed from a double genital eminence, is the result of the natural, and I suppose inherited, tendency of the crura and erectoris penis to grow towards and blend with each other. We need not, I think, call in the various fantastic theories which have been formulated to account for epispadias. The case of epispadias which has been recorded shows, especially in the failure to unite to the pubes, as evidenced by X rays, that it is merely a minor degree of the deformity known as ectopia vesicæ, and the scar tissue which has been described as occurring in the extreme lower and front part of the abdomen in this particular case may show efforts on the part of Nature during embryonic life to heal the breach in the anterior groove of the bladder. "Epispadias" may be a useful name, and should be, perhaps, retained, but it must not be considered as a comparable condition to hypospadias, and the groove on the dorsal surface of the penis must not, I repeat, be regarded as a urethra at all. The orifice in association with epispadias should be regarded as a congenital penile fistula, exactly comparable to a congenital urachal fistula of the bladder.

The Cases of Hypospadias.

The following case is described here because it may be considered to show the advantage of a new method of operating, or rather a method which differs from those of the books.

CASE 3.—The boy, aged 8 years, was the only child of his parents. He was healthy, but in addition to the congenital deformity he had strabismus of rather marked nature and a testicle which was not fully descended on the right side. I saw him first in 1917 and performed an operation upon him, which, however, was only partially successful. He was admitted to Guy's Hospital in June, 1920. The strabismus is not so marked as before and both testicles are fully descended. The local condition of the penis is as follows. The foreskin is fixed around the glans, but not adherent to it. Behind this there is a groove on the under surface of the penis, passing in front underneath the foreskin, and behind under a bridge of skin. This bridge of skin unites the skin of the body of the penis, which lies on each side of it. Behind this bridge of skin there is another groove, which passes behind into the true opening of this boy's urethra. We have thus for consideration, from behind forwards, on the under surface of the penis, the abnormal misplaced urethral orifice with a groove in front of it about ¾ inch long; a bridge of skin 1 inch long lies in front of this gap. In front of the bridge there is another groove 1 inch long, succeeded by the foreskin, which forms part of a tube, the dorsal part of which is formed by the glans penis. Upon the glans penis there is a small depression in the position of the normal meatus. My first operation, in 1917, was in part a failure. Two bridges had been retained, but there are two gaps situated between the foreskin bridge and that which connects the skin of the sides of the penis. A probe could be passed under the foreskin into the distal gap, from thence under the penile bridge to the skin of the proximal gap, and so into the orifice of the urethra. The patient has complete control over the time of micturition; he can hold his water, but he cannot direct the stream of urine in a proper manner; it is directed vertically downwards, or even a little backwards. At the last operation, which has been completely successful—i.e., in June, 1920—I first performed perineal section and opened the urethra and inserted and fixed with sutures a catheter into the bladder. A narrow oval-shaped incision was then made close to and around the distal gap on the penis, the skin near the middle line—which, it is important to note, showed no signs of hair formation—was dissected slightly towards the middle line and turned over, and the edges thus apposed were sutured together with fine catgut, the sutures being placed about ¼ inch apart. About ten such sutures were inserted. The skin which lay outside the area of incision was turned outwards and peripherally after the necessary dissection. The raw area on one side between the cutaneous tube and the external skin was united to that of the opposite side by sutures placed Lembert-wise, formed of catgut, and about eight in number. The edges of skin were then united over this sutured area with salmon-gut, and an anchor dressing was then applied. The main difficulty, as I thought, was still before me. In previous cases of hypospadias which have necessitated operation there has always been some difficulty in dealing with the orifice of the hypospadias—that is, the orifice of the urethra—and I have frequently had fistulæ occurring here. The proximal gap—that is, the one inch which the opening of the urethra ran—had still to be closed. This, as it happened, was quite easily done. I made a similar oval incision right round the proximal gap, which thus included the urethral orifice. In this and similar operations I have great objections to the removal of any part of the urethra, and I did not want to excise the orifice. After the continuous oval incision had been made, and the skin edges had been turned inward and outward, all that had to be done was, in fact, a repetition of what had previously been done. The edge of skin internally was turned over and sutured, the edge of skin externally was turned outwards, the raw area was united with Lembert sutures, externally the skin edges were united with salmon-gut, and an anchor dressing applied. I felt certain about what had been done, and so did not probe the tube which had been formed in order to demonstrate its integrity. Perineal drainage was adopted for three weeks, sutures were removed at the end of 17 days, and the patient began to pass his water through the new opening almost immediately after the catheter was removed from the perineal wound. The stream of urine emerges from the end of the penis, it is sufficiently concentrated as regards its flow, and the direction is forwards, parallel with the axis of the penis. There is no sign of any urethral fistula. A No. 4 olive-headed catheter can be passed into the bladder quite easily, I saw the boy on July 26th. The wound is completely healed and shows no signs of breaking down.

I propose now to consider an operation for the relief of hypospadias of such a degree as to be associated with a perineal opening. (Cases 4 and 5.) First, as to the necessity of an operation in such cases; although the patient has control over the flow of urine, micturition in these cases has to be done in an inconvenient position, like a female. Even if the patient has functional testicles he cannot discharge semen into the female vagina, and thus children are an impossibility after marriage: and when the penis is turgid and full of blood it is apt, instead of being erect, to be recurved downwards and backwards, so that entry into the vagina is difficult, if not impossible. On these grounds, therefore, operation is called for.

I have performed the following operation on two occasions, one in a male, aged 30 (Case 4), and another in a boy, aged 17 (Case 5). The former afterwards married. He had indications of being functionally active. The last named was a fine healthy boy. I have not succeeded in tracing him. The two operations were conducted on precisely similar lines, and were almost completely successful. They were performed in June, 1913.

The patient was placed in the lithotomy position, the penis was drawn up on to the anterior abdominal wall and secured in that position. An incision was made behind the normal urethral orifice, and the bladder entered. A catheter was inserted through this opening, and thus drainage from the bladder was effected during the healing of the necessary wound. In both cases there was a brown pigmented raphé stretching from the glans penis to the orifice of the urethra, which was not capable of full extension, thus offering the cause of the recurved penis during turgidity. An incision was made on each side of this central raphé, as close as possible to it, extending from the glans to the urethral orifice, and the raphé was deliberately excised. The edges of skin which were left after excision of the raphé were carefully sutured together and united. It is needless, almost, to add that the incisions passed along the scrotum near the middle line, and great care had to be taken not to open the scrotal cavities. Another similar incision as to length and direction was

[2] Ibid

made on each side of, and 8 mm. away from, the first line of sutures, extending from a point well on the glans to a point behind the level of the urethra. The succeeding steps of the operation were similar to those I have already indicated. Thus, the edges of the skin were turned inwards and outwards; the inner edge was dissected up a little way, with as much subcutaneous tissue as was reasonably possible, and united with the corresponding edge of the opposite side. The skin which was thus turned over showed no sign of hair formation, and when united formed a long tube leading from the glans to the urethral orifice. A simple calculation will demonstrate that the diameter of the tube would be—if there was no contraction—half a centimetre. The raw area between the inner and outer edges of these incisions was then united across the middle line by means of catgut sutures applied Lembert-wise, and thus the new tube was buried deeply. The outer edge was dissected upwards and outwards, and was joined to its fellow of the opposite side with salmon-gut and horsehair sutures. An anchor dressing was then applied. Unfortunately, the method described of treating the urethral orifice in Case 3 did not occur to me, and a small gap was left in this region. This gap and hole was directed backwards. It never occurred to me to bring the two incisions together behind the urethral orifice; it is in the bringing of these incisions thus together behind that this important region is closed.

The wounds in both these cases healed by primary union, and urine was discharged along the new urethra. In the case of the more elderly man the application of pure liquefied carbolic acid led to the healing of the little fistula, and the new urethra was rendered intact. In the case of the younger patient a small fistula remained which was damp, but the patient did not pass urine through it when he micturated.

Conclusion and Summary.

The principles of all these operations may be thus summarised:—

1. When it is necessary to form a bladder careful union of the mucosa is necessary after cautious dissection of the edge and turning it inwards.

2. Lembert sutures applied to the subcutaneous surface and superficial to the important parts are quite essential to the success of an operation. They bury deeply the main structures concerned, and undoubtedly prevent sepsis affecting the buried line of sutures.

3. It is of no use forming a bladder without a compressor to control the passage of urine. From the first case described it is evident that a portion of one of the recti abdominis may be utilised, as its nerve-supply need not be damaged, and its arterial blood-supply is sufficient after ligature of the distal part of the deep epigastric artery to maintain its nourishment.

4. When it is necessary to form a urethra, as in the cases of hypospadias which have been described, the same important principle applies with regard to the skin of the new urethra as applies to the treatment of an extroverted bladder—that is, the new skin tube must be buried deeply by Lembert sutures applied to the subcutaneous tissue on each side.

5. No probe or catheter should be passed along any new tube which has been formed. There is no necessity for such a proceeding if the work has been done properly.

6. Anchor dressings are most useful, doing away with much difficulty to the patient and the nurses.

7. No hesitation must be shown in opening the bladder when necessary and draining it through the perineum or other convenient route, so as to prevent urine creeping along the new passage and contaminating the sutured edges of the wound and leaking into and soaking the surrounding structures.

8. With regard to after-treatment, attention must be paid, especially in adults, to preventing turgescence of the penis, and, for this purpose, a light diet and potassium bromide are indicated strongly.

In conclusion, many surgeons have said these types of cases are most hopeless from the point of view of operative treatment: some have gone so far as to refuse operation. It is a matter of small wonder, therefore, if private practitioners have told their patients they had better put up with their trouble lest worse ensue. My reply is that I have never seen patients worse after operation in my own practice. An operation may be a complete failure, but I have never seen the condition rendered worse by an operation; and, after some experience of these cases at the Victoria Hospital and at Guy's, I am now able to report six cases in which the desires of the patient and his or her friends were completely satisfied, and the objects aimed at by the surgeon were attained.

Queen Anne-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTES ON SIX CASES OF ENCEPHALITIS LETHARGICA.

BY R. S. MCCLELLAND, M.D. EDIN.,
AND
A. E. KEOWN, M.B., B.CH. BELF.

FIVE of the following six cases occurred in this district recently and three are alive. It is noteworthy that five are reported as having been met with at Tredegar, a few miles away, in May and June of 1918.[1] It was at this time that one of us saw the first case.

CASE 1.—S. A. H., a girl of 15, was sent, as she complained of diplopia, to an optician, who sent her back as he had great difficulty in examining her—he said that she persisted in falling asleep. She was seen six times at her home in June, 1918. At the beginning she ate very freely and at times spoke very rapidly. There was incontinence of urine. She lay with hands folded on chest and "slept all the time, but never refused anything." There was no pain. She never spoke unless in monosyllables, and then only when shouted at. There was no vomiting and no retraction of head. There was irregular breathing during last two days of life. She was less than a fortnight ill.

CASE 2.—A. C., a soldier of 23, was seen 33 times and by six medical men between May 1st and 24th of this year. He had been a prisoner of war in Germany. On April 29th he noticed a twitching above his left groin which was a little painful, but more annoying as it prevented his sleeping. A. E. K. saw him on May 1st and noted that sharp contractions were taking place in the lower fibres of the left external oblique. These were about 20 per minute, fairly regular, and so sharp as to interrupt his speech. A day or two later one of us thought this such a unique condition that he took him in his car to the local hospital, where he was seen by Drs. R. and G. The twitching gradually spread to the left rib margin and then, crossing the central line, affected the whole abdominal wall. The tongue became densely coated. The pupils were widely dilated, but reacted normally to light and accommodation. The delirium at night became more and more pronounced until his people complained they could no longer manage him. The muscular spasms affected first one and then both legs, and he complained of severe pains in the neck, legs, back, and arms. There were temperatures noted during the first week of 101° and 103° F., and the pulse steadily advanced to 120. The night delirium became a wild mania, and on the 11th he was removed to the Merthyr General Hospital. Here the nurses had "a terrible time" with him, and it was decided to take him back to his home the next day. While waiting for a car he played on the ward piano and sang a sentimental song which greatly affected the other patients. He became steadily worse, and when last seen was sitting on the edge of his bed with his head fallen forward on chest as though there were some paralysis of neck muscles. He answered all questions correctly in the day-time to the end. The speech was of a slow, scanning type. There was some constipation but no incontinence of urine during the illness. He died on the 24th, the date when the first myoclonic type case of Dr. A. W. M. Ellis was admitted to the London Hospital. Ordinary sedatives had little or no effect on him, and it was fortunate that a relative had had experience of mental nursing.

CASE 3.—K. W., a girl of 20, was seen on May 7th, when she was very restless. She had complained of great pain in frontal and occipital region for some days, with giddiness. There followed this an illness in three stages. First there was four to five days of wild delirium, during which she tossed her arms and head from side to side as she lay in bed, and shouted and sang and prayed. Then came the typical night delirium and day stupor period. She would sit up in bed at night, go through the movements of washing her hands and face, taking hairpins from her mouth, and doing her hair. When told that she was in bed she would reply, "Of course I am," and lie down again. This second stage lasted about a fortnight, and was followed by a completely lethargic period of about 11 weeks. Then she began to notice people, to whisper their names, and to follow their movements. Her face was mask-like; now the wrinkles are returning. The thick brown coating is nearly gone from the tongue. The nystagmus has disappeared, and the conjunctivitis due to sleeping with half-closed lids. Massage is rapidly restoring to the legs the power of movement and the drop-feet are picking up rapidly. She is "bether" now, and she should soon be able to speak without slurring. She can sit up and watch the passers-by, but cannot walk yet. She talks in a whisper for the most part, but can explain terms such as "tetra-dynamous," "orthotropous," &c. She owes her life to devoted nursing.

CASE 4.—W. P., a collier of 38, was seen many times between May 21st and 28th, when he was removed to the infirmary. He complained of severe pains in the head. There was sharp twitching in the legs, and he became very tremulous and weak. The jerking shook him all over. He breathed very deeply for some hours on the 23rd, and complained of a pain in the gall-bladder area. His pupil were widely dilated. He was "full of work" each night. He would get out of bed and look for his lamp, start filling tram, "the roof would be falling," &c. Next day he would be shy and self-conscious, would ask why the doctor had called, and hope that no one had been telling stories about him. He was very constipated and ate ravenously. For the last two nights he was at home he was wildly maniacal from midnight to 5 A.M., and he died some five

[1] Vide the L.G.B. Blue-book, New Series, No. 121.

days later—June 2nd. He was the second case of the myoclonic type with mania to occur in this practice. The mania was extreme, and more violent than in the case of A. C.

CASE 5.—T. M., a collier of 20, was seen on June 6th with a left hemichorea and a right facial paralysis. Later the left external rectus was seen to be paralysed. He had been delirious from the night of the 3rd. Temperatures of 100° and 101° F. were noted, and a pulse of 48. It was interesting to watch him in the day-time smoking imaginary cigarettes, at times blowing off the ash, and at times watching smoke-rings floating away, with eyes half open and eyelids blinking to moisten the eyeballs. At night he would spring up in bed and start cutting coal, or he would be hunting for something through the house. This stage lasted about ten days in his case. Since then he has been stuporose, his face has been mask-like, and he has lain without voluntary movement. Now there are bedsores, he is sweating profusely, and there is swelling of both feet.

CASE 6.—D. D., a corporation official of 73 who had been working in a gassy place, was delirious on the night of June 24th. When seen next day he was reading a newspaper. He complained of sharp pain in the left occipital region. He was with difficulty kept in bed. A confirmed pipe-smoker, he insisted on smoking his thermometer. There were for some days twitchings of head, arms, and legs. He is much better, and was a very slight if typical case. Dr. Allan C. Parsons, of the Ministry of Health, was not so certain of the diagnosis in this as in the other cases he saw. He asked that these cases, and especially those of a myoclonic type, should be reported with a view to eliciting information from other general practitioners and that a permanent record should be made.

Malingering, mania, meningitis, hysteria, chorea, and Landry's were diagnoses suggested by medical men who saw the early cases. The wasting is extreme and blueness and heart attacks are common. The alternating stupor and delirium or mania and moroseness are very characteristic. We have not had in this practice any ordinary meningitis or poliomyelitis cases recently. Here are a few questions awaiting solution. Why do so many cases occur in the spring-time? Why are they so scattered? Why do people living or sleeping with cases not become infected? Can gas and food poisoning be definitely excluded? What would be the result to a nation of an epidemic of this disease on influenza lines?

Dowlais, Glam.

NOTE ON A CASE OF HYSTERICAL PARALYSIS IN A SOLDIER.

BY DAVID FORSYTH, M.D., D.Sc., F.R.C.P. LOND.

THE patient, after long service in the firing line in France, was invalided to England with 30 or 40 superficial wounds made by a hand-grenade thrown at him during an attack. Convalescing from these, and while still in hospital, he was allowed out for the first time, and on his return was found to have lost the use of his right arm. Physical treatment of many kinds was tried but failed, and he was pensioned from the army. When, several months later, he came under my notice the arm was rigid and could be raised by a great effort to a horizontal position but no higher; the hand was fixed in one position—thumb and little finger stiffly extended, the other three fingers tightly pressed into the palm. One or two interviews served to illuminate the case.

The patient, a big, powerful man, square-jawed, and with a dominating personality, had voluntarily enlisted in August, 1914, and served continuously at the Front until he was wounded. There could be no question he was a good and keen soldier. He was strict in his obedience to all superiors, spoke with pride of the friendly terms to which his battalion officers had come to admit him, and frankly owned that he had undertaken many hazardous enterprises in the hope of winning a military decoration.

But another side of his character lay deeper. In our conversations he treated me affably as an equal, and as he let himself go he began to pour out what was at first a stream of criticism, and soon became a flood of abuse of headquarter staffs, the War Office, the Government, &c., and every other sentence contained an oath. Since his discharge from the army he had devoted himself to open-air oratory, and at street corners his loud, assertive voice proclaimed the coming social upheaval which was to give the future to the common soldier and dispossess the favoured classes; in general he preached from the text, "Jack is as good as his master." This good soldier, zealously obedient and proud to be noticed by his superiors, was at heart a red-hot revolutionary.

The circumstances of the paralysis are these:—

He had practically recovered from his wounds, and the afternoon came when he had permission to go into the town for the first time. But as luck would have it, this was the very day when there arrived from London that famous order of the War Office requiring even wounded soldiers to salute officers in public. This seems to have stirred mixed emotions. In the event, as he reached the town and saw the first officer approaching, he straightened himself in soldierly fashion and at the correct moment began to raise his right arm in salute. But (I quote his words and accompanying action) when his arm got half-way up it stuck, the three middle fingers curled into the palm, and with thumb and little finger stiffly extended—thumb at the tip of his nose, little finger to the officer—he walked past. From that moment his arm has never gone higher than the level of his nose, and no hand of marble could have retained its expression more faithfully.

An hysterical symptom, Freud has taught us, gives symbolic expression to a repressed wish and to its counter-wish; it is a compromise formation and serves to gratify both impulses. Our soldier-revolutionary could hardly have epitomised his mental conflict more convincingly had he spoken outright, "I salute you—damn you."

AN UNUSUAL CASE OF PARATYPHOID INFECTION.

BY E. WORDLEY, M.B. CANTAB., M.R.C.P. LOND.,
ASSISTANT BACTERIOLOGIST, ST. THOMAS'S HOSPITAL.

THE two points of interest in the case are, apart from the difficulty of diagnosis, the unusual range of agglutination in a paratyphoid infection, more especially if the history is correct, and the fact that joint and bone complications in such infections are rare.

A boy, aged 4, was admitted on July 26th, to St. Thomas's Hospital under Mr. J. E. Adams with the following history. Fourteen days before admission he was taken ill with headache and general malaise, and was disinclined to play. His mother stated he had a temperature of 100°F. at this time. Three or four days later he had a severe sore-throat, and at the same time he had diarrhœa, passing three or four motions daily. The diarrhœa subsided after four days, after which he was constipated, but the fever continued, although his general condition improved. Five days before admission he complained of pain in the right shoulder.

On admission the boy looked well. The right shoulder was swollen, and there were signs of effusion of fluid over the anterior aspect of the joint. He would not use the right arm, but passive movement did not appear to be painful, with the exception of abduction. The temperature on admission was 101° and continued between 101° and 102° for the next five days, after which it fell to normal by crisis. On July 29th, the joint was aspirated, and about half a c.cm. of blood-stained fluid was withdrawn. Films from this fluid showed a large number of cells, polymorphs and small lymphocytes being in about equal proportions. A few Gram-negative bacilli were also seen. On cultivation *B. paratyphosus B* in pure culture was isolated. On further inquiry the boy's mother is certain that he was quite well until, as stated above, 14 days before admission. There had been no other illness in the house, and both she and her husband had been in perfect health. The boy's father had served in the army during the late war, but states he had no illnesses throughout his service. He had also served in the Boer War and then had "enteric fever."

The patient's blood was taken on August 1st, 20 days from the onset of his present illness, and tested for agglutinins, when it was found that his serum agglutinated *B. paratyphosus B* up to the dilution of $\frac{1}{7500}$, but *B. typhosus* and *B. para. A* gave no agglutination at 1 in 25. Examination of the fæces was made on August 4th, but no paratyphoid bacilli were isolated. The urine contained some pus and *B. coli* was found to be present. The stools were again examined on August 13th, when *B. paratyphosus B* was isolated. Three further examinations of the stools at five-day intervals gave negative results. Similarly the urine was also examined, pus still being present on each occasion, as also *B. coli*, but no paratyphoid bacilli. The father's fæces were examined, but no member of the enterica group was obtained. All stiffness of the shoulder had disappeared ten days after the aspiration and the boy seemed quite well. X ray examination of the shoulder failed to reveal any disease of bone.

A further agglutination on Sept. 2nd gave an end-point against *B. paratyphosus B* of $\frac{1}{7500}$. There is now (Sept. 2nd) no disability of the shoulder-joint whatever. It was found that throughout the summer the boy had been in the habit of eating ice-creams from a barrow in the street every Saturday and Sunday.

Webb-Johnson,[1] in a review of the surgical complications of typhoid infections in the war from 1914–18 in France, gives 1382 cases of paratyphoid infection in which there were two cases of acute arthritis and three cases of subacute arthritis, but a paratyphoid bacillus was only isolated in one case, an arthritis of hip, from which paratyphosus B was grown. Professor L. S. Dudgeon informs me that amongst a very large number of cases of paratyphoid infection in Gallipoli and Egypt in 1915 and the Balkans in 1915–19 he was not acquainted with an instance in which paratyphoid bacilli were grown from a case of arthritis.

With regard to the agglutination results, if the mother's history is correct, and she was certain of the dates, to attain a titre of $\frac{1}{7500}$ in three weeks is most unusual in any case of infection of the enteric group.

[1] Webb-Johnson: Surgical Aspects of Typhoid and Paratyphoid Fevers, Oxford Med. Pub., 1919, p. 142. THE LANCET, 1917, ii., 813.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL SECTION.

Exhibition of Clinical Cases.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 8th, Sir ANTHONY BOWLBY, the President, being in the chair.

A Case of Splenomegaly.

Dr. W. SALISBURY-SHARPE showed a case of Splenomegaly, with great enlargement of the liver and with jaundice, but without ascites.

For the past ten years the patient, a man aged 58, had noticed that his eyes were tinged with yellow. Up to two years ago he remained in good health, but then began to notice shortness of breath; in February, 1920, he was compelled to discontinue his sedentary work because of dyspnœa and weakness. His jaundice at this time became deeper. For 18 months he had been getting thinner. The stools had been of normal colour. There was no history of a similar condition in other members of the family. When examined he was thin and jaundiced, with distinct cyanosis and venous arborisation on the face. Respirations were 32 per minute; spleen extended to two fingers-breadth below umbilicus, and was firm and solid; liver reached for four fingers-breadth below costal margin. Signs of a dry cavity at left pulmonary apex. A blood count was as follows: Red blood cells, 3,200,000 per c.mm.; hæmoglobin, 80 per cent.; colour index, 1·3; leucocytes, 9100 per c.mm. of which 61 per cent. were polymorphonuclears, 30 per cent. small lymphocytes, 5 per cent. large lymphocytes, and 4 per cent. large hyaline mononuclear cells. Many mast cells were present and the polymorphonuclear cells presented pyriform buds from the nucleus. Wassermann reaction had been negative on two occasions. Bile pigments in the blood serum, but none in the urine, in which, however, was some urobilin. The fragility test had not been satisfactory.

Dr. Salisbury-Sharpe discussed the differential diagnosis and favoured a diagnosis of acquired acholuric jaundice.

Dr. F. PARKES WEBER felt convinced, from the appearance of the patient that the case was one of cirrhosis of the liver, falling into the group described as hypertrophic cirrhosis of the liver with chronic jaundice and splenomegaly. He did not think that it belonged to the hæmolytic group.—Dr. R. HUTCHISON agreed that some cirrhosis was present, was sceptical as to the existence of Hanôt's cirrhosis, and had not met with it. This case, he thought, was either one of splenomegaly becoming Banti's disease, or acholuric jaundice. There was no ascites, however, and he favoured the latter alternative. The determining test, fragility of the red blood cells, had not been carried out. He advised against removal of the spleen.

Dr. PARKES WEBER showed a case of

Symptomatic Paralysis Agitans following Encephalitis Lethargica.

The patient, a man aged 23, developed a "cold" in December, 1919, and a week later became lethargic, remaining so for five weeks. He did not go to bed but went off to sleep on sitting down and was always drowsy. This was followed by gradual recovery. In June, 1920, he had an attack of diarrhœa and then noticed that his hands were shaky; walking became difficult, and ultimately the typical picture of paralysis agitans developed. The exhibitor said that hitherto no case had been described in which paralysis agitans followed the ambulatory form of encephalitis lethargica. Of special interest was the long interval elapsing between its onset and the primary disease. He regarded the patient as not having overcome his infection and referred to a case of symptomatic paralysis agitans in which a fatal recrudescence of the encephalitis had occurred.

Dr. S. A. K. WILSON said that he had seen several of such cases, and certain of them had improved while under observation. At present the question of prognosis was an open one. The paralysis agitans took some time to develop, suggesting progressive degeneration of the thalamus.—Dr. HUTCHISON had had the patient under his care in hospital. His condition had shown extraordinary fluctuations, and varied in degree from day to day. It was difficult to see how this variability fitted in with an organic lesion.

Dr. S. J. ROBERTS showed for Dr. A. F. HURST a case of

Pseudo-hypertrophic Muscular Paralysis.

The patient was a man, aged 53. According to his story, he could travel by train by himself in 1914, but could not now mount up a step. He had always, however, been muscularly weak as a child, and had never been able to run upstairs. There was no relevant family history.

Dr. WILSON said that it was a case in which much depended upon the history. It opened up the question as to whether myopathy could be arrested. There was comparatively little hypertrophy but a good deal of fat, which might obscure it. The fact that the knee-jerks were obtainable after so long a course was against myopathy.

A Case of Hydronephrosis.

Mr. R. P. ROWLANDS showed a case of Hydronephrosis due to kinking of the ureter by abnormal vessels.

The patient, a woman aged 49, gave an 18 years' history of pain and swelling in the left loin. Seventeen years ago she had had two operations—tapping and nephrorhaphy. These had been followed by relief for ten years, but since there had been increasing attacks of pain and swelling in the left flank again. An X ray examination for stone was negative. The urine contained oxalate crystals, a few pus cells, some albumin, and from it *B. coli communis* was grown. The urea in the blood was three times the normal. A diagnosis was made of obstruction of the ureter by an abnormal vessel or valve ureter. By operation the ureter was found to be constricted by an abnormal artery and vein passing behind it and kinking it at its junction with the pelvis. These vessels were divided, but a constriction remained and a valve was present at the junction of the ureter with the pelvis. The opening was enlarged by Finney's method. The abnormal vessels, as usual, came from the renal vessels. Attention to this condition had been drawn by Newton Pitt in 1894. Mr. Rowlands had operated upon 12 cases. Either a vein or an artery or both travelling towards the lower pole of the kidney might hook the ureter and cause hydronephrosis. The vessels came almost invariably from the main renal vessels and generally passed behind the ureter. Renal colic and intermittent hydronephrosis were thus caused, but little change occurred in the urine. Renal calculi sometimes formed in the dilated pelvis. Physical signs, cystoscopy, and pyelography might establish the diagnosis. Timely division of the offending vessels usually relieved this condition, but in some cases utero-pelvic anastomosis was necessary to relieve secondary stricture or valvulation. In late cases nephrectomy might become necessary. The condition was little known and often overlooked, even at operation, nephropexy, nephrolithotomy, or even nephrectomy having often been done.

The PRESIDENT referred to Newton Pitt's first group which had been discovered post mortem. He agreed that the cases were much commoner than is usually supposed.—Mr. GIRLING BALL spoke of a patient whom he had recently treated, who had suffered from attacks like Dietl's crises. The diagnosis had been made by pyelography, which revealed an acute angulation of the ureter at its upper end. He had operated upon six cases diagnosed by this method and agreed that the condition was not very uncommon. The obstructing vessel might be very small.—Dr. HUTCHISON said that he had seen several examples; many different diagnoses had been made and surgical procedures erroneously performed. Pyelography he regarded as a valuable method in their investigation. He had the impression that the affection was commoner in males and on the right side.—Mr. ROWLANDS, in reply, spoke of a boy of 18½ years who had seen 20 consultants and had always been told that nothing could be done except nephrectomy. His own impression was that this variety of ureteric obstruction occurred more often in women and on the left side. He agreed as to the usefulness of pyelography.

Mr. ROWLANDS also showed a case of Partial Gastrectomy for Simple Ulcer, a case of Hour-glass Stomach and Pyloric Stenosis, and a case of recovery after operation for Gastric Carcinoma.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 7th, Professor HENRY BRIGGS, the President, being in the chair.

A Case of Fibro-sarcoma.

Mr. DOUGLAS DREW described a case of Fibro-sarcoma from the Hollow of the Sacrum. The presence of the tumour had been known for eight years, and the second pregnancy, seven years ago, was terminated at the thirty-second week on account of it, the child surviving. During recent years the tumour had caused chronic pelvic pain and pain on defæcation, but had increased only slightly in size. Per rectum a hard and very tender mass could be felt, which was firmly fixed. At the operation it formed a projection on the right of the rectum about the size and shape of a small kidney, the upper end being at the level of the first sacral foramen, and the tumour was closely adherent to scar tissue in front of the sacrum. Microscopic examination proved it to be a fibro-sarcoma with a cellular stroma suggesting a malignant nature, although clinically the tumour was of very slow growth and encapsuled.

Mr. T. G. STEVENS considered it a very difficult case, and proposed that the specimen should be referred to the Pathological Committee. He did not think it was a sarcoma; the suggestion had been made that it was an adrenal rest tumour.—Mr. GORDON LEY seconded the proposal. He said the microscopical appearance resembled that shown in the adrenal rest tumours described by Grawitz.—Mr. DREW cordially accepted the suggestion to refer the tumour to the Pathological Committee. The fact that it had remained practically stationary in size for eight years was against the adrenal rest theory.

The PRESIDENT gave a short communication on a

Spoon-shaped Depressed Birth-fracture of the Right Frontal Bone Treated by Elevation.

He had recently been associated with Dr. W. McIntyre Brown and Mr. Craig Dun in the treatment of such a case. The baby, a female, weighed 9 lb. at birth, and after instrumental delivery showed a spoon-shaped depressed fracture of the right frontal bone 2½ in. by 1½ in., and ⅛ in. deep. There were no signs of cerebral pressure or irritation; the bulk of the depression was below the hair level and produced a most unsightly deformity. Mr. Dun had decided on operation, since no spontaneous elevation had occurred during three weeks. Under ether two half-inch incisions were made in the upper part of the frontal bone on either side of the depression, so that both lay in the hair-covered area. The incisions passed through the scalp and the thin membranous bone, and by means of two flat-bladed periosteal detachers the depressed bone was levered up. The small skin incisions were closed with a few horse-hair sutures. There was no shock after the operation nor any signs of cerebral disturbance, and healing occurred normally. The cosmetic result was most satisfactory.

Mr. CLIFFORD WHITE said that there were two classes of case with depression of skull bone—those with a subdural cerebral hæmorrhage and those without—which could not be differentiated unless an incision were made and a skull-flap turned up. If a subdural hæmorrhage existed it could be seen and cleared out by raising a flap of dura. A child on whom he had performed this operation six years ago could now speak and run, and was in every way normal, whereas the treatment by elevation of the bone without exploration might result in cosmetic improvement without repair of more serious damage.—Mr. DREW agreed with Mr. White; he demurred to the term fracture. In the cases he had seen there was no actual fracture, but only a depression.—Dr. G. BLACKER, on the other hand, was inclined to criticise the treatment given on the grounds of unnecessary severity. He had found it sufficient to lever out the depression with the point of a vulsellum.—The PRESIDENT, in reply, said he had brought the case forward to stimulate discussion, as medical men should have some guide as to the procedure they ought to adopt in such cases.

The Surgery of the Uterus Bicornis Unicollis.

In the absence of Professor J. M. Munro Kerr Dr. H. WILLIAMSON read his short communication on the Surgery of the Uterus Bicornis Unicollis, with a case of resection of uterus followed by two normal pregnancies. After describing two cases of asymmetrical bicornual uterus Professor Kerr proceeded to discuss the variety of this malformation in which the two halves are symmetrical. He drew attention to the plastic operation for this condition and recorded a satisfactory case of his own where resection was followed by two pregnancies. The patient had had two abortions, and after the second curettage Professor Kerr obtained her permission to resect the uterus, as he had found on examination that the two halves were symmetrical. He excised a portion out of each half and carefully stitched the two halves together. Some months later she became pregnant with a first stage of 18 hours. When the second stage had lasted two and a half hours Professor Kerr had delivered with forceps for fear of a rupture, but the pelvis was flattened and delivery difficult. The child was born asphyxiated and lived only 12 days, dying as a result of cranial injuries. Professor Kerr had inserted his hand into the uterus to determine the condition of the cicatrix and felt a firm longitudinal ridge running vertically along the anterior and posterior uterine wall. Professor Kerr then gave a brief description of the technique of the operation, which could only be performed when absolute symmetry was present. The suture used for the principal stitches was linen thread and for the intermediate stitches fine catgut.

The Intravesical Repair of Inaccessible Vesico-vaginal Fistulæ.

A second communication from Professor KERR was then read on the Intravesical Repair of Inaccessible Vesico-Vaginal Fistulæ. He said that the difficulty of repair in certain of these cases was difficult, either because of the size of the tear or because of its inaccessibility per vaginam. The latter difficulty occurred in the case described, which followed a radical operation for advanced carcinoma of the cervix. When asked by the patient to repair the fistula Professor Kerr found it to be too high in the vault of the vagina for repair by that route. He therefore made a transverse incision into the bladder and opened its vault transversely. He could then see the fistula at the base, and separated off the mucous membrane, the muscle and the mucous membrane of the vagina, with the idea of inserting two layers of sutures and knotting the one in the bladder and the other in the vagina. As it appeared that these latter sutures might be difficult to tie, he threaded each end of his suture into straight needles, which he pushed down into the vagina. He first closed the mucous membrane, the wound in the bladder, and the abdominal incision, and then seizing from below the needles pushed into the vagina he removed them and tied the ligature firmly with long pressure forceps. A self-retaining catheter was inserted for two or three days and the patient recovered with complete healing of the fistula. Professor Kerr thought that this procedure might be found useful in certain cases and had not heard its use suggested by other surgeons.

The PRESIDENT said that A. F. McGill, of Leeds, had habitually performed this operation from the bladder, and he himself had also done so, but he considered that as a rule it was a mistake.—Dr. AMAND ROUTH said that he separated the bladder from the uterus and drew it down so as to be able to reach it per vaginam.—Dr. T. W. EDEN said that the operation was much more difficult after hysterectomy, when it was difficult to draw down the vaginal wall far enough. Some abdominal operation must be available. Dr. Eden had twice dissected off the bladder and then closed the fistula from the abdomen, but considered that Professor Kerr's method was well worth a trial.

A Case of Placenta Prævia with Vasa Prævia.

Dr. A. J. MCNAIR described a case of Placenta Prævia with Vasa Prævia delivered by Cæsarean section. The patient, aged 30, was admitted to Guy's Hospital for hæmorrhage in the thirty-fifth week of her hitherto

uncomplicated first pregnancy. She was seen first by Dr. McNair after a plug had already been inserted into the vagina and the membrane accidentally ruptured; the bleeding had not stopped, the patient was blanched, and the pulse-rate 140. The presentation was a vertex and the fœtus was alive. The cervix was rigid and dilated only to one finger, and a marginal placenta prævia was felt. Hæmorrhage was profuse, and after considering alternative methods of treatment Dr. McNair decided to perform Cæsarean section under gas and oxygen anæsthesia. The child was delivered in a condition of white asphyxia, from which it was resuscitated, and mother and child subsequently recovered. Examination of the after-birth showed that with a marginal placenta prævia there was a velamentous insertion of the cord so disposed that the spread-out vessels lay over the internal os, and also that the rupturing of the membrane had resulted in the tearing of a large vein. The survival of the fœtus after a considerable direct hæmorrhage was regarded by Dr. McNair as remarkable.

Presidential Address.

Professor BRIGGS then delivered his presidential address, the subject being the Pelvic Floor. He referred to the researches of Henry Savage, Braune, and Berry Hart on the structural anatomy of the female pelvic floor, and expressed his admiration of the work of the last-named. Hart laid the foundations on which subsequent work was built, and his views received much support and some criticism from Professor Johnson Symington in 1887. Hart's conception of the pelvic floor, as an obstetrician, was that it included both the pelvic diaphragm and the perineum below, and the bladder in the pubic segment above. An inclusion of the bladder embarrassed the term pelvic floor; accordingly, scientific anatomists have followed Symington, whose definition of its limits excluded all the overlying viscera. The complete closure of the unoccupied visceral canals—the "clefts" or "faults"—within the pelvic floor from peritoneum to skin was an important physiological and prophylactic function, as well as an invaluable physical feature for clinical discernment. For example, when occupied the pouch of Douglas had long been familiar as a mine of gynæcological activity. When empty the close contact of its walls was consistent with the similar disposal of the walls of the "clefts" within the normally firm pelvic floor. Above and within the pelvic floor close packing and laxity of tissue were incompatibles; close packing and firmness of tissue were inseparables. The firmness of the pelvic floor was ascribable to the mixed nature of its total constituents. Amongst them the voluntary muscles were prominent. The President quoted Professor Peter Thompson as saying that—

> In all mammals the closure of the "clefts" or "faults" in the pelvic floor is brought about by the action of muscular fibres, and the compact mass forming the floor of the pelvis is therefore, even in its simplest form, partly muscular; the rest is made up of connective tissue and integument. The muscular fibres, which form a distinct layer in the pelvic floor, surround the canals which traverse the "clefts" and they control or guard these canals at their outlet; in other words, the layer is largely sphincteric in action. But, in those mammals in which the floor is further modified for the support of abdominal viscera, another layer is developed in the form of a well-marked diaphragm, a muscular sheet attached on all sides to the walls of the pelvic cavity. In the human subject this sheet includes the levatores ani and coccygei muscles.
>
> The more highly differentiated pelvic floor, therefore consists of an upper layer designed for support and a lower layer designed for control, which forms sphincters for the openings of the perforating canals. The two layers are not only functionally but morphologically different, the lower layer being derived from the sphincter cloacæ and the upper from the flexors and abductors of the caudal and of the vertebral column. In tailed mammals this group of muscles passes from the side wall of the pelvis to the tail and moves that structure. But coincident with the assumption of the upright posture not only is the number of caudal vertebræ reduced but the muscles which move them undergo similar retrogressive changes. This group is now available for other functions, and it eventually undergoes such modifications as to form the diaphragm, which is such an essential feature of the pelvic floor in some of the primates.

A further step in the advance of scientific anatomy was also laid by Professor Peter Thompson, who suggested that the presence in man of a strong visceral layer of pelvic fascia not found in animals might originate from the fibrous sheath enveloping the obliterated hypogastric artery, and the vessels supplying the bladder, uterus, vagina, and rectum, by lateral extension on to the fascia covering the upper surface of the levator ani. Manfred Moritz, writing on the significance of the parametrium, submitted that the vessels, nerves, lymphatics, and ureters, with their sheaths of smooth muscle, alone, together with the retroperitoneal connective tissue in which they run, are the chief factors in the support of the pelvic viscera. According to Moritz, the extensible vessels, strengthened by elastic masses of smooth muscle, allow all the changes of pregnancy, of full and collapsed bladder, and of rectum, to take place without any interference with the normal state of these tissues and without vascular disturbances. This tissue, moreover, possesses a definite tonus of its own.

The President said that in 1908 Professor Arthur Keith attributed the supporting function of the pelvic floor to: "(1) the musculature of the pelvic floor; (2) the visceral ligament of the pelvic fascia as described and defined by Professor Paterson; (3) the strong perivascular and perineural sheaths." He then endorsed the accuracy of the visceral ligament of Professor Paterson, and added the independent observations by Dr. John Cameron and Professor Elliot Smith—namely, the continuity of the visceral ligament on each side with the perivascular supports, especially with the extremely strong fibrous sheaths surrounding the prostatic, vaginal, and uterine veins. The primary function of the visceral ligament met with a dissenting judgment from Professor Keith, based (*a*) upon the mechanism of the bladder in situ behind the pubis on its visceral ligaments, and (*b*) upon a warning note that without any elongation of the visceral ligaments, but between them, the yielding and prolapse of the centrally-placed trigone musculature is due to the injured and weakened levator ani and sphincter vaginæ.

The President said that the scientific knowledge of the pelvic floor had been founded well, and mainly within half a century. It was not at any rate ridiculous to sum up the structure and functions of the pelvic floor as the blending of an upper diaphragmatic stratum with a lower cloacal stratum—each peripherally coterminous with the pelvic outlet, and together filling the pelvic outlet from the peritoneum to the skin. The flap-splitting perineal operations began in the right permanent way; they did not go far enough in depth and width; at their best they were subcutaneous and over rather than among the weakened tissues. Primary suture of lacerations of the sacral segment of the pelvic floor must be thorough and should be extended to the loosened and the torn fascial sleeves for the replacement of rectal and vaginal canals, otherwise the intermediate diaphragmatic and perineal fasciæ and muscles are permanently cramped. Primary suture of the pubic segment of the pelvic floor is seldom needed; it is raised during parturition, and is kept raised and supported after parturition by the fully repaired sacral segment. Firmness of the pelvic floor and complete closure of its canals or clefts are attributes of normal development, structure, and function. If their attainment after injury is surgically possible, it will not be by neglect of the pelvic diaphragm during a perineorrhaphy, which should be extended to a repair of the pelvic floor by elevation of the posterior and posterolateral walls of the vagina to expose for suture the separated firm tissues of the pelvic diaphragm. The value of Paramore's elaborate defence of the levatores ani and their adjacent fasciæ ought to be daily asserted in obstetrics and gynæcology.

The President proceeded to discuss the definition and etymology of the word perineum; the meaning of the term perineum is generally correctly interpreted as the lower region of the pelvic floor conveniently subdivided but confusedly described. He concluded his address as follows: "The term obstetrics literally means 'standing before.' Antenatal service lightens our anxieties and dangers. Let there be added the pelvic floor repair, resembling the abdominal wall repair carried out after a well-conducted abdominal

section. Local supervising authorities under the Midwives Act are awakening to this provision."

A vote of thanks to the President, proposed by Mr. J. D. MALCOLM and seconded by Dr. RUSSELL ANDREWS, was carried with enthusiasm.

WAR SECTION.

Medical Requirements for Air Navigation.

A MEETING of this section of the Royal Society of Medicine was held on Oct. 11th, when Wing Commander MARTIN FLACK read an interesting paper on the Medical Selection of Candidates for Commission in the Royal Air Force. He considered that selection for rapid eye and hand reflexes would be unsatisfactory, as it would rule out those who on application have slow reflexes, but who learn well and quickly. Psychological aptitude must be taken into consideration, but he considered that flying officers rather than medical officers are the best judges of such psychological aptitude. Good vision and good ocular muscle balance were most important. Although slight defects of vision did not prevent a man becoming a good pilot, such defects were a very serious handicap to fighting efficiency, and very few officers with visual defects gained distinctions and decorations in fighting. Muscle-sense played a big part in the maintenance of equilibrium and the management of the machine, as also did to a certain degree skin sensation such as the rush of air on the face. A healthy auditory apparatus was very important; there should be no gross ear disease and no Eustachian obstruction, as equalisation of pressure in both ears was very important. Eustachian obstruction was liable to produce intense pain in the ear with the very rapid and great alterations of pressure experienced in military aviation. The vestibular mechanism and semicircular canals play but little part in flying efficiency, and in a fog the most experienced flyers could not tell their relation to the earth. The semicircular canals apparently only gave information in regard to the pilot's relation to the machine, but not to the earth. A sound condition of respiratory fitness was necessary with good air intake and good expiration, and the vital capacity should be 4000. Flying exhaustion increased the residual air and diminished the tidal air. The accessory respiratory mechanism should be in good condition, and a proper tone and force of the diaphragm and abdominal muscles was very important. If the respiratory and accessory respiratory mechanism were in first-class working order a man should be able to hold his breath without undue discomfort for 90 seconds. Candidates unable to hold the breath without discomfort for 69 seconds should be rejected. As regards the circulation there should be no undue quickening of the pulse on exercise, and there should be a quick return to normal. The diastolic blood pressure was the most important and should never be below 60 mm. Hg.

Air Commodore M. H. G. FELL then explained to the meeting the administration of the Air Force. During the war he said that there was no definite standard laid down on which the selection of flying officers could be based, and capable flying officers were sometimes obtained when marked defects of sight, hearing, or circulation were present. He believed that one officer who did excellent work was totally blind in one eye. He considered that psychological fitness could not be ascertained by medical examination, and it had been arranged that the opinion of a flying officer personally acquainted with a candidate's flying training should be obtained as to a candidate's psychological fitness.

Sir JOHN GOODWIN, the Director-General, A.M.S., proposed a vote of thanks for Wing Commander Flack's interesting lecture, and this, being seconded by Rear-Admiral P. W. BASSETT-SMITH, was carried by acclamation.

MEDICO-LEGAL SOCIETY.—A meeting will be held at 11, Chandos-street, W., on Tuesday, Oct. 19th, at 8.30 P.M. Lord Justice Atkin will deliver his presidential address, which will be followed by a discussion, and Dr. Bernard H. Spilsbury will exhibit specimens.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:

EIGHTH ANNUAL CONGRESS.

THE eighth annual congress of the National Association for the Prevention of Tuberculosis was opened at Liverpool at 10 A.M. on Oct. 7th, and continued through the two following mornings. The afternoons were devoted to visiting neighbouring institutions, and the evenings to social events and popular lectures. At the first session Sir ARTHUR STANLEY occupied the chair after the Lord Mayor had welcomed the delegates to the city. Sir Arthur Stanley thanked the Lord Mayor and agreed with him that Liverpool was in the front rank of civic bodies who were devoting their best energy to the fight against tuberculosis.

In the absence of Dr. E. W. Hope (medical officer of health, city of Liverpool), Dr. A. A. MUSSEN, deputy medical officer of health, read the paper contributed by his chief. In this paper Dr. Hope reviewed the history of notification and the growth of the dispensary system and of sanatoriums. He pleaded that patients should be admitted to these at all stages of the disease, just as the fever hospitals admitted every infectious case, whether mild or serious. Dealing with prevention, he mentioned disinfection of dwellings and articles of clothing, and laid particular emphasis on the need for better housing accommodation.

Dr. NATHAN RAW, M.P., who followed, expressed the belief that of all the diseases with which health authorities are called upon to deal none are more difficult, more perplexing, or more unsatisfactory than tuberculosis. This is because tuberculosis is part and parcel of the social problem of the country. In this respect Dr. Raw believes that it is unlike any other disease. The difficulties are added to by the fact that we have yet no accurate knowledge of the disease. The administration of sanatorium benefit under the Insurance Act resulted in short periods of treatment at sanatoriums. Now that the Ministry of Health is to have the organisation of this benefit through the local authorities he was sure that enormous improvement would result.

The Place of Research.

Dr. PAUL A. LEWIS, of the Henry Phipps Institute, Philadelphia, U.S.A., said that it was with considerable emotion that he spoke on this his first visit to England. He expressed the hope that America might coöperate with this country in fighting tuberculosis, as she had coöperated in the more urgent conflict with the Central Powers. Dr. Lewis maintained that the abolition of poverty would not in itself suffice to free the race from tuberculosis. The problem was ultimately a medical one. He spoke as a laboratory investigator rather than as a clinician, and from this point of view gave a brief historical sketch of the rise and fall of various specific remedies for tuberculosis from the first therapeutic use of iodine by Dr. Lugo in 1800 down to Friedmann's turtle vaccine, Rogers's sodium morrhuate, and the French treatment with cerium salts at the present day. Each of the various remedies was found wanting because of the lack of scientific evidence adduced in its support. There was, however, no reason in principle why a specific treatment should not one day be discovered. An initial difficulty in experimenting was the variable resistance to tuberculosis encountered in different families of the same animal species. In order to achieve a uniform standard in this respect he had carried out a number of experiments on guinea-pigs at the Henry Phipps Institute. In the course of these it had been determined that variations in susceptibility to infection depended on the factor of heredity more than on any other single factor. Whereas the ancestry of the guinea-pigs counted for 30 per cent. of the variation the weight and rate of growth counted for no more than 7–10 per cent. of this variation.

Domiciliary and Dispensary Treatment.

Dr. H. HYSLOP THOMSON dealt mainly with the problems of domiciliary and dispensary treatment.

It was important, though not sufficient, to find houses. The position of the general practitioner with regard to domiciliary treatment, and especially with reference to preventive measures, needed to be more clearly defined. The measures of assistance to patients should be on a more elastic basis, so that help may be given to those in urgent need of additional food. The dispensaries should not be overcrowded, as at present they are, with cases that do not need further treatment. This is the result of an imperfect coördination between home treatment and care in the dispensary. He outlined a scheme whereby general practitioners, appointed as part-time tuberculosis officers, would have charge of domiciliary treatment and at the same time attend the clinics.

Dr. I. STRUTHERS STEWART was not satisfied with the results achieved in the campaign against tuberculosis. Often we had to admit that all the special methods of treatment were contra-indicated and that little could be done to influence a case towards recovery. There was need for a wide scheme of national research. The cost would be high, but the cost of tuberculosis to the community is also high. A larger number of resident officers should be appointed in the industrial sanatoriums, and every sanatorium, whether for private or industrial patients, should be open as a centre for students and for post-graduate study.

The "Edinburgh" System.

Dr. HALLIDAY SUTHERLAND gave a very eloquent address in support of what he described as the coördinated or Edinburgh system. This system, he said, had been working for nearly 30 years in Edinburgh, but had only been properly at work in England since the year 1912. Various criticisms were levelled at one or other of its interdependent institutions—the sanatorium for example. The bad after-results from sanatorium treatment must not be taken to signify that sanatoriums are useless, but that they are not properly used. The average length of treatment at Davos was two years. How could we expect to get results when we only treat patients in our sanatoriums for three months? He strongly criticised Dr. Hope's system of introducing patients at all stages into sanatoriums. It was no doubt due to the absence of proper accommodation for advanced cases. Notification was another part of this system which was not properly carried out. The machinery we had must be made right use of.

Dr. CHARLES L. MINOR (North Carolina, U.S.A.) also disapproved of taking patients into the same institution who were at different stages of the disease.

Mr. T. WHITE (Liverpool) regretted the absence of Dr. Hope. He thought that the latter would have said in reply to critics that already a hospital had been set aside in Liverpool for advanced cases. No one would go in. Dr. Hope had then set aside a special ward in a general hospital, but that also suffered from a reputation of being an asile for hopeless cases. Mr. White thought it better to build houses at £1000 than to build sanatoriums at a cost of £500 per bed. Also he deprecated the system whereby tubercle-free milk was saved for invalids and the healthy population dosed with infected milk. It would be better to organise a national campaign to stamp out bovine tuberculosis. Another reform he thought necessary was the closer coördination of authorities dealing with tuberculosis administration.

Dr. J. R. GILLESPIE read a paper giving comparative tables of patients treated in sanatoriums and dispensaries. The after-results of dispensary treatment were the more favourable, the success being attributed by Dr. Gillespie to tuberculin administered "in a rational way."

Dr. ERNEST WARD (South Devon) had some hard things to say about conventional treatment in sanatoriums. He inveighed particularly against "exposure" and "graduated labour." Experience had shown that fresh air does not cure tuberculosis. More attention should be devoted to treating tuberculosis as an infectious disease.

FRIDAY, OCT. 8TH.

On Oct. 8th, with Lord GLENCONNER in the chair, Principal J. G. ADAMI gave the opening address in a discussion on practical difficulties in connexion with the carrying out of tuberculosis schemes and the best measures to overcome them. He said that the tuberculosis problem was primarily an economic one. Those who prefer to regard it as a medical one might say that if a specific cure were found it might be effective in a few days, whereas present methods required months to arrest the disease. But the bacillus had been known for nearly 40 years, and no specific cure had yet been found despite the labours of skilled men in many countries. He did not expect that such a cure ever would be found. The reaction of the tissues was such that the bacillus becomes surrounded with dense fibrous tissue. Even though a drug might be found which would be instantly fatal to the bacillus in the test-tube, he doubted whether it would be possible to introduce a sufficient quantity into the organism to penetrate the tubercles.

The "Class" Treatment.

Could we isolate all cases of tuberculosis until such time as the disease were arrested, in ten years tuberculosis would be as rare in Great Britain as leprosy is now. But no Chancellor of the Exchequer could find the funds necessary. Even if he did cases would remain undiagnosed and so keep a proportion of the population subject to infection. But it is possible to segregate considerable numbers of the advanced cases, and the more successful we are in this the greater will be the reduction in morbidity. The chronic fibroid ambulatory case presents a great difficulty and the problem of this case remains unsolved. The cases in the first and second stages of the disease cannot all be treated in sanatoriums on account of the cost involved. Professor Adami warmly commended the "class" treatment as introduced by Dr. Joseph Pratt, of Boston. The four essential points of this treatment he described as: (1) Absolute rest in the open air; (2) forced feeding; (3) the keeping of record books; (4) a weekly "class" meeting. The first could be secured in town by the use of the window tent or a tent on the flat roof so common in Canada. In the record books the patient notes temperature, pulse-rate, dietary, and hours in the open air. The essential administrators are the physician, who should be young and enthusiastic and supported by a social worker. Funds are supplied by a voluntary organisation. In each case in Montreal this consisted of a church congregation. The classes were most economically run when they numbered about 25. Professor Adami did not think the sanatorium could be superseded by this method. There would remain many cases whose home conditions made impossible the "class" system of treatment.

The Diagnosis of Chronic Bronchitis.

Dr. B. T. J. GLOVER (Liverpool) discussed economy from the point of view of keeping non-tuberculous cases from occupying sanatorium beds. In cases over 35 years of age with signs of emphysema and bronchitis and abundant expectoration, he had found that the absence of bacilli in the sputum indicated that such cases were not tuberculous. The system of filing in Liverpool had enabled him to check the diagnosis made in these cases, and it was found that they did not return to the dispensary for treatment, nor were their deaths notified as due to tuberculosis. Other cases liable to wrong diagnosis were suspected early cases in young adults, ex-Service men with gas poisoning, and children under 10 years of age with certain unilateral basal lesions, described by the speaker as "bronchiectasis." If any case in one of these three groups showed persistently negative sputum sanatorium treatment was not justified.

Sir HENRY GAUVAIN emphasised the importance of taking the human factor into consideration in dealing with tuberculosis schemes. Many had failed because this was not done. The new colonies schemes were very expensive, and he warned their promoters not to make the same mistake. He caused some amusement by reading the notes of lectures on tuberculosis of the spine given to him when he was a student. Education was necessary both for the laity and the profession.

Dr. A. SANDERSON, of the Ministry of Pensions, advocated the use of a standard record card, such as has been found valuable in his department. It should be filled out in duplicate. One copy would be kept at the "base" and be available for tuberculosis officers who might have need of it and to research workers for statistical purposes.

Dr. W. H. DICKINSON (Newcastle-upon-Tyne) considered that sanatorium treatment was almost always successful, but relapse was very common when open cases returned to their insanitary home environment. The greatest obstacle to a patient's recovery was his financial embarrassment. In the case of ex-Service men much better results were being obtained because they received a pension in proportion to their disability. The worker who contracts phthisis ought to be compensated on the same principle. He expressed approval of the practical scheme for municipal workshops recently outlined by Dr. F. S. Tinker.[1] He mentioned the difficulty of avoiding contact cases in domiciliary treatment in one- or two-roomed dwellings, and said that the Newcastle authority was devoting a number of the new houses to tuberculous cases.

Dr. NOEL BARDSWELL had heard that the publication of certain figures for which he had been responsible had caused a certain degree of pessimism. This showed that the figures had not properly been understood. Of 1337 slight cases examined under the London Insurance Commission, 70 per cent. were living after five years. Of the 2322 moderately advanced cases 29 per cent. were living, while 3 per cent. were alive of the 1140 far-advanced cases. These figures did not warrant any feeling of pessimism as to the usefulness and efficacy of the tuberculosis schemes now in process of development throughout the country. They covered a period when many workers were away at the war. On the side of positive gain they showed that the people dying of tuberculosis were being watched, taken care of, and contact cases were being examined, while the spread of infection was prevented. The next generation would consider that we had underestimated the progress made in our time.

Dr. STEPHEN J. MAHER (Newhaven, Conn., U.S.A.) thought otherwise. He believed that in the future we should be judged by the fact that one funeral in every 12 is still due to tuberculosis. The fundamental mistake that is made at the present time was that we had not realised that the tubercle bacillus was only a modified form of a non-pathogenic organism. Methods of cleanliness would ultimately be adopted which would prevent this transmutation from taking place. Vaccines would be prepared not against the tubercle bacilli, but against their precursors, while sera would be used to reverse the process of transmutation. On the platform were a number of bacterial colonies growing on slope culture media which Dr. Maher claimed were transmuted forms—one colony being a close imitation of the bovine tubercle bacillus grown from *B. subtilis*.

Dr. MINOR, in the course of a breezy and loudly applauded speech, dealt with the psychological aspect of sanatorium treatment. A constant change of physicians such as was liable to occur in public sanatoriums precluded the cultivation of a right "atmosphere." Discipline was essential. His patients were taught that they must obey him. He thought that the sexes should be mixed. "Twosing" was not allowed and he had difficulty with serious love affairs on very few occasions. Above all, the patient must feel that the doctor is his friend who takes an interest in his private affairs and can influence him through the development of his character.

Dr. ERNEST WATT (Scottish Board of Health) advocated popular education and the provision of increased facilities for sputum tests in public health laboratories.

Dr. JOHN LEESON, of the Middlesex County Council, considered an important measure and an economic one was the prevention of marriage between people predisposed to tuberculosis.

Mrs. EMILY PALMER, J.P. (Southampton), agreed with Professor Adami that the crucial problem was one of economics and not of medicine. She deplored the suggestion that a Chancellor of the Exchequer could not find whatever was necessary. Property was considered of greater value than human life, else why was it so much easier for the War Office to get money than for the Ministry of Health? If money spent on suppressing Ireland and occupying Persia were devoted to the tuberculosis campaign great progress might be made.

[1] THE LANCET, 1920, vol. i., p. 1290.

SATURDAY, OCT. 9TH.

Milk Legislation.

Sir ROBERT PHILIP was in the chair for the session on Oct. 9th, when the problem of milk infection was considered. He pointed out that the speakers who introduced this discussion might be considered as authorities, either from the administrative point of view or as research workers.

Dr. A. W. J. MACFADDEN, C.B., of the Ministry of Health, emphasised the importance of milk to the community, especially as a means of supplying accessory food factors. Tuberculosis in cattle made the business of milk production an unprofitable one to the farmer. When the new legislation has come into full operation, 2 per cent. of their stock might be expected to come annually for slaughter under the provisions of the Tuberculosis Order. From the consumer's point of view he noted that in Dr. Stanley Griffith's recent report to the Medical Research Council 20 per cent. of the cases of human tuberculosis examined by this worker were found to be undoubtedly of bovine origin. He mentioned also the research being carried out at present at the Reading Agricultural College to determine the most economical methods of producing and distributing wholesome milk. Under the new legislation, a part of which is still before Parliament, county councils will, for the first time, be brought into touch with the machinery of production. Local authorities will be empowered to appoint a sufficient number of veterinary surgeons to carry out the inspection of dairy cattle in their district. It is hoped that this scheme of inspection will result in bringing to light the cases of tuberculosis in cattle, which will then be slaughtered and compensation paid according to the provisions of the Tuberculosis Order. The system of granting certificates to farmers who produced milk of a certain quality (Grade A and Grade A certified) had resulted in the production of some tubercle-free dairy-stock and was a valuable experiment.

Methods of Sterilisation.

Professor J. M. BEATTIE (Liverpool) discussed three main methods of preventing infection through milk. Samples of dried milk had not shown *B. tuberculosis*. But experience had shown that the process of suspension was often imperfectly carried out in the home, so that the child got sometimes little besides water, and often a fluid that was contaminated in manufacture. Delépine had found living bacilli in milk dried over cylinders heated to 138° C.–140° C.[2] Pasteurisation also killed *B. tuberculosis* in the great bulk of cases when properly carried out. But the commercial methods used in this country are very ineffective. His experience, however, in examining samples from the Liverpool Infant Welfare Centre showed that if properly carried out the method of sterilising milk by heating it was effective. The milk must, however, be heated above 70° C., at which temperature the milk proteins underwent some change. The results of sterilisation at lower temperatures by electricity had been satisfactory. The third and most rational procedure was to remove the source of infection. The only satisfactory method of control was bacterial examination of the milk by inoculation methods; there should also be a regular testing of herds with tuberculin.

Surgical Tuberculosis in Children.

Sir ROBERT JONES (Liverpool) said that in any children's hospital the cases of surgical tuberculosis might be divided into three groups: (1) tuberculosis, (2) poliomyelitis, (3) rickets. Half of all cases belonged to the first group. Two-thirds of the infection in this

[2] Report to Local Government Board, 1914.

group was of the bovine type. In nearly every case the infection could be traced back directly to the cow. If these cows were not slaughtered they should be branded so that they could not pass from a controlled to an uncontrolled area to infect a new series of children.

Mr. Alderman SHELMERDINE (Liverpool) urged that the urban authority should be able to control the conditions of milk production in the rural areas from which its milk is drawn. Three-fourths of the milk consumed in Liverpool came from areas outside Dr. Hope's jurisdiction. He advocated milk laws to enforce proper water-supply, drainage, and ventilation of all shippons, dairies, and dairy-farms. He had no sympathy with the American system of grading. There was only one grade of water admitted, why admit three grades of milk?

Dr. LEWIS explained how the American system of grading had arisen through the supply of milk by large concerns, who had to transport it often 800 miles to the cities. He said that this system had been the largest single factor in the education of the farmer, who was naturally anxious to secure the higher prices paid for higher grades of milk. In the large towns where only grade A milk could be sold there had been a marked diminution of gland tubercle. This diminution had not occurred in country districts where the less satisfactory milk was still obtainable.

Dr. D. FORDYCE recommended that all milk as sold to-day should be boiled. Babies could be successfully fed on boiled milk if vitamines were supplied additionally through fruit or vegetable juices.

Professor STENHOUSE WILLIAMS (Reading), in a very impressive and loudly applauded speech, recounted the difficulties which had confronted the dairy trade, the members of which had always been most anxious to adopt the best measures for the purification of the milk-supply. It had been very difficult to secure either money or facts to support research. In order to ensure a decent milk-supply there must be the right man in the cow-house. No inspector would rise early enough to control the milking conditions. The milker must therefore be educated and given a good wage. He must be supplied with water. At least 2 per cent. of cows which to outside appearance are in good health are giving tuberculous milk. Such milk is sent out from four farms out of 14. Not only do these cows infect milk directly, but their dung remains infectious for 12 months if kept in a dark place, and so may contaminate other milk. Nothing less than the tuberculin test will eliminate these cows from the herds. The farmer asked how he was to replenish his stock if tuberculous cattle were destroyed. They had put out a scheme four years ago for raising non-tuberculous cows at Reading to replace cows so eliminated, but money had not been forthcoming. Another practical difficulty was the absence of any standard tuberculin or any standard method of using it. He condemned vigorously the propaganda which would excuse the consumption of tuberculous milk on the ground that it immunises children. The dose of tubercle bacilli is unknown, the resistance of the child is unknown, and it is not possible to say that the bacilli which enter the child's body do not remain latent and reappear after a lapse of years as human bacilli.

Dr. WILLIAM ALLEN DALEY pointed out that the determination of the presence of bacilli in milk by inoculation tests took too long and advocated research to discover a more rapid method.

Resolutions.

The following resolutions were moved by Sir ROBERT JONES and seconded by Dr. HYSLOP THOMSON:—

That this Conference views with satisfaction the growing interest that is being shown throughout the country in relation to the prevention of tuberculosis.

It reaffirms its belief that the methods which are being adopted are justified by the results obtained, and would urge their still more vigorous prosecution.

In particular it would urge the Government to consider the immediate institution of a more definite system of medical inspection in the case of certain industries where tuberculosis is especially rife.

It would also urge that the Tuberculosis Order, 1914, be brought into operation with as little delay as possible. The Conference further resolves that these resolutions be sent to the Council of the N.A.P.T. with a view to their transmission to the Prime Minister, the Minister of Health, and the Minister of Agriculture.

After a discussion, during which Dr. E. I. MCDONALD (tuberculosis officer, county Carlow) made an insistent plea for more adequate remuneration to the general practitioner, who at present was given the vital and difficult task of discovering early cases without reward, the resolutions were put to the meeting and carried unanimously.

The Report of the Council.

The report of the Council was presented to the twenty-first annual meeting of the N.A.P.T. in the Picton Hall, Liverpool, in the evening of Oct. 8th. Great progress has been made in the scheme for establishing a colony for ex-Service men at Barrow Hill, in Surrey. It is hoped that the training colony will be established this autumn and the colonists selected. Considerable assistance is being afforded by the Ministry of Health. Educational propaganda has been carried on, but the Council is hampered by lack of funds. The adoption of the report was moved by Sir ARTHUR STANLEY and seconded by Lord GLENCONNER and carried. The Hon. Mrs. Stirling of Keir, Sir StClair Thomson, and Mr. Reeves-Smith were elected new members of the Council.

Public Lectures and Visits.

On Friday afternoon the City Sanatorium at Fazakerley was formally opened, when Dr. JOHN UTTING, the chairman of the Finance Committee and of the sanatorium, gave a short account of the buildings, after which they were thrown open for the inspection of visitors. On Saturday popular lectures were delivered by Professor BENJAMIN MOORE on the New Crusade against Tuberculosis, and by Dr. R. OWEN MORRIS on How to Fight Tuberculosis. Visits were paid by the delegates, among other institutions, to the Liverpool Children's Hospital and Open-air School at Leasowe, the Royal Liverpool Country Hospital for Children at Heswall, the Delamere Sanatorium, and the Training Colony for Tuberculous Ex-Service Men at Frodsham. Some of the delegates also visited the various sites where building is taking place in the suburbs of the city.

The Conference was well attended by the public. There was a general consensus of opinion that sanatorium treatment had not given the results which 15 years ago were so confidently expected, and emphasis was laid on the supreme need of devoting more attention and more money to prevention.

A Temperance Breakfast.

The Liverpool branch of the Church of England Temperance Society gave a breakfast at the Exchange Hotel on Oct. 8th to the members attending the conference on Tuberculosis at St. George's Hall. Dr. HAIG, who was in the chair, remarked that alcoholism was a national question, and though we might not feel it wrong to drink alcoholic beverages ourselves, we must look on the whole problem with a social conscience. He introduced Dr. T. N. KELYNACK, who read a paper on Alcoholism and Tuberculosis. The speaker dealt first with the direct action of alcohol, quoting Sir William Osler in support of the contention that the resistance of the body to infection is lowered by its use. But the chief way in which the chronic alcoholic exposed himself to infection from tubercle was through the indirect effects of chronic addiction upon personal hygiene and upon social and domestic conduct. Those who were improperly fed and clothed as a result of poverty through drink fell an easy prey. Much contagion was contracted at the public bar. Dr. Kelynack then read a symposium of opinions in agreement with his own contributed by Sir Robert Philip, Sir Sims Woodhead, Sir Thomas Oliver, Sir Henry Gauvain, Professor Hope, Professor E. L. Collis, Dr. Nathan Raw, and Dr. C. J. McAlister. He argued for additional research on alcohol and tuberculosis by the profession and for a school campaign of temperance education along the lines recommended in the new syllabus of the Board of Education. Agents of insurance bodies should give health instruction in England as they do in America.

A vote of thanks to the speaker was proposed by Archdeacon HOWSON and seconded by Dr. MCALISTER.

Reviews and Notices of Books.

THE DUODENAL TUBE AND ITS POSSIBILITIES.

By MAX EINHORN, M.D. London and Philadelphia: W. B. Saunders Company. 1920. Pp. 122. 13s. 6d.

Professor Einhorn's ingenuity in devising apparatus for plumbing the hidden depths of the alimentary tract has been widely recognised. In this small volume he describes numerous modifications of his original duodenal tube and hints at various diagnostic and therapeutic manœuvres which he believes them to have brought within the range of practicability. There is no doubt that the study of gastric and duodenal secretory function has been greatly advanced by the employment of the duodenal tube, but the scope for its numerous offspring depicted in Professor Einhorn's new book would appear to be more limited. His claims frequently lack experimental support, and he does not produce substantial evidence that by these new devices the diagnosis of such conditions as pyloric stenosis, for instance, is made any more easy or certain than by the methods already in vogue. It is true that the book is only a résumé largely devoted to technique, but the frequency of unscientific generalisations is annoying. Under a discussion of the duodenal instillation of gases the author states: "Thus CO_2 could be tried in painful conditions of the intestine." Why should distension with CO_2 be calculated to relieve "painful conditions of the intestine"? Anyhow, this phrase is so loose that it should surely not be employed in a medical book. In the same chapter under the heading of duodenal alimentation occurs an instance of the author's vague and general claims. He states: "In nearly half of all the cases of ulcerations of the stomach and duodenum, in which before duodenal feeding the thread test was positive, it became negative after treatment. This would point most likely to the fact that an actual cure of the ulcer had taken place." The thread test is hardly yet an accepted proof of the presence of an ulcer; still less should the absence of a blood-stain be regarded as conclusive evidence of healing. The number of cases is not stated, but "nearly half" does not suggest a particularly encouraging recovery-rate. Theoretically, the presence of a tube in contact with an ulcer, even if it obviates the contact of food, does not recommend itself, although it may be admitted that duodenal alimentation is a method deserving of trial in selected cases.

In discussing the analysis of duodenal contents the author makes little mention of the difficulties dependent on the mixture of secretions obtained. Duodenal specimens must of necessity represent a very varying combination of gastric, pancreatic, and intestinal secretions and bile, whether in healthy or diseased subjects. The illustration of specimens of bile obtained in several conditions is pretty, but diagnoses based on the colour and consistency of the bile must surely be liable to fallacy. No mention is made of the bacteriological investigations of the duodenum and small bowel which the duodenal tube has made possible. Professor Einhorn describes no less than 11 modifications of the original model, for which he has invented names such as, "the sectional intestinal examiner"; "the intestinal delineator"; "the simultaneous gastro-duodenal aspirator"; "the infantile dilating pyloric catheter," and so on. None of them would appear to hold the promise of the author's original tube, the simplicity and adaptability of which are its chief assets.

ENLARGEMENT OF THE PROSTATE.

Fifth edition. By Sir PETER J. FREYER, K.C.B., Surgeon to St. Peter's Hospital. London: Baillière, Tindall, and Cox. 1920. With 56 plates. Pp. 174. 10s. 6d.

THIS is a fifth edition of a series of lectures delivered by the author. The various theories which have been put forward to account for the enlargement of the prostate in the later years of life are discussed. The writer considers that the enlargement is adenomatous in character, the cause of the growth being as yet unexplained. He describes his operation of total enucleation of the enlarged prostate in its capsule; the urethra is usually torn across at the level of the verumontanum, and the ejaculatory ducts are, as a rule, left adherent to the portion of the prostatic urethra anterior to this point. The bladder is always drained through a large tube, for which a smaller one is substituted on the fourth day. The writer has performed his operation on over 1600 patients, including 92 octogenarians. The results are discussed and a large number of cases are detailed, many of which have been followed up and their after-history traced for ten years and more following the operation.

The death-rate has been reduced to 4 per cent. in Sir Peter Freyer's last 300 operations on ordinary cases. In old age—that is, in men over 80 years—the mortality is much higher—namely, 11·3 per cent. One chapter is devoted to a discussion on the advisability of performing the operation in two stages, the conclusion arrived at being that this should be always avoided if possible. In the author's experience vesical calculus is often associated with enlargement of the prostate, more frequently than once in every sixth case.

A new chapter on cancer of the prostate is added. The incidence is given as 13·8 per cent. of all cases of prostatic enlargement. The symptoms are those which occur in simple enlargement of the organ, but run their course in months instead of years. Moreover, loss of flesh, loss of strength, and pain occur. Hæmorrhage is rarely found. The author recommends enucleation in those cases where the cancer has supervened upon a previously enlarged adenoma, provided that the prostate is still movable. He does not, however, advise suprapubic enucleation in cases of primary carcinoma of the gland unassociated with an earlier innocent growth, since in these subjects extension to the adjacent structures takes place very early.

This book is of great value, since it summarises the author's unequalled experience of the surgical treatment of enlarged prostate. Its value would be still further increased by an expression of opinion as to the merits of the various tests of renal function that may be applied before prostatectomy to aid the surgeon in doubtful cases and to warn him when he is dealing with a subject whose kidneys are already so much damaged that any operation might be sufficient to induce uræmia.

ANÆSTHETICS, THEIR USES AND ADMINISTRATION.

Sixth edition. By DUDLEY WILMOT BUXTON. London: H. K. Lewis and Co., Ltd. With 97 illustrations and 8 plates. 1920. Pp. 548. 21s.

THIS text-book has been much enlarged and considerably altered. The general arrangement remains that with which many readers have for long been familiar, the physiological qualities as well as the practical uses of each anæsthetic being described in a chapter. Dr. Buxton takes the wide view of anæsthetics to be expected from a man with his long experience and judicial mind, and it is impossible to discover that he has any favourite among the various agents and methods available for producing anæsthesia, unless it is that in administering chloroform a dosimetric apparatus is to be preferred to the drop-bottle and mask. He approves, too, of the mixture of alcohol and chloroform (1 in 10). The popular C.E. mixture is severely criticised, more as a result of laboratory investigations than on clinical grounds. The pages on choice of anæsthetic, indeed, pleased us less than did the rest of the book. Many anæsthetists will hesitate to adopt gas and ether for intranasal operations or operations upon the eye, other than excision; and intratracheal ether insufflation should rarely, we think, be chosen for abdominal work.

There is no better portion of the book than that which deals with nitrous oxide, whether we regard the account of its physiological action or its application in practice. Here we are interested to note that Dr. Buxton is strongly opposed to re-breathing. The author considers nasal methods of giving "gas" less safe than oral, but we note that he does not allude

to the addition of oxygen to gas given by the nose. Generally speaking, however, he is a warm advocate of the use of oxygen concurrently with all anæsthetics, and he is also insistent on the advantage of warming vapours before they are inhaled. When using open ether Dr. Buxton prefers to shorten the induction stages by starting with a weak chloroform vapour after preliminary injection of morphine and scopolamine. He dislikes the "rousing effect of ether upon the patient bemused by the drugs." Another plan recommended is to start with the mixture of alcohol and chloroform; if this is adopted Dr. Buxton insists on the importance of employing a separate mask so as not to pour the chloroform mixture on the many layers of the open ether mask, for the reason that undue quantities of chloroform might be imprisoned. The author believes that from the open ether mask a percentage vapour of ether not higher than 12 per cent. is obtained. This is considerably lower than the 20 per cent. estimated by Waller.

The descriptions of apparatus and the illustrations and plates in the book are extremely good. Dr. Buxton discusses the nature and treatment of shock and the causation of fatalities during anæsthesia in comprehensive fashion only to be achieved by wide reading and experience. The book is one to be read with profit and pleasure by any advanced student who is concerned with the administration of anæsthetics.

DISEASES OF THE EYE.

Third edition. By M. S. MAYOU, F.R.C.S. London: Henry Frowde and Hodder and Stoughton. With 124 original illustrations and 8 colour plates. 1920. Pp. 326. 10*s*. 6*d*.

IN the preface to this edition the author intimates that, having regard to the fact that the medical students' curriculum is already overburdened, he has only added such new material as will bring the volume up to date. While not pretending to give anything like a complete account of the subject, his object is to convey so much of its essentials as every medical practitioner should be familiar with on entering the profession. The result is a handsome volume of convenient size, containing about half the matter to be found in handbooks such as those of Swanzy or Parsons, and less than a quarter of the amount contained in one of the larger text-books, such as that of Fuchs. One feature of this work reminds us that its author has distinguished himself in ocular pathology—namely, the inclusion of figures illustrating the microscopical appearances of such common conditions as phlyctenular conjunctivitis and arterio-sclerosis of the retina. These figures are superior to those generally found in larger text-books. The operations described are few but are well selected, and include a method of iridotomy not generally known.

CLINICAL OPHTHALMOLOGY.

For the General Practitioner. By A. MAITLAND RAMSAY, M.D. London: Henry Frowde and Hodder and Stoughton. 1920. Pp. 500. 42*s*.

IN a foreword to this book Sir James Mackenzie tells us that it was he who suggested that the author should write it, "drawing his information from his own experience and not copying the beliefs and superstitions of his predecessors." The advice has been faithfully followed, and the product is no ordinary text-book, in which the whole ground of ophthalmology is treated in a superficial manner. It is a work specially adapted to the needs of the general practitioner who desires to understand the bearings of all the eye cases with which he is likely to be confronted, without pretending to deal with those difficult cases which rightly belong to the sphere of the specialist. It is not an elementary book in the sense of being a mere introduction to the subject, for important sections are treated fully, and especially in such affections as phlyctenular disease the directions for treatment and general management leave little to be desired. On the other hand, the author assumes that with regard to certain other parts of the subject his readers desire to possess only such familiarity as to know their own limitations and the right moment to call in expert aid. Thus, consideration of operative treatment, except for the simplest cases, is wisely omitted, and though the importance of the ophthalmoscope in general medicine is insisted on there is no attempt to deal with the niceties of ophthalmoscopic examination. It may be added that the methods of testing refraction are only lightly touched upon, so that the practitioner who proposes to prescribe glasses for any but quite simple cases will have to supplement the information he will find here. Perhaps the plan on which the book is written will best be indicated by quoting the titles of some of the chapters: "The clinical significance of œdema of the eyelids"; "The clinical significance of a 'bloodshot' eye"; "The clinical significance of a hard eye"; "The duty of the general practitioner towards a patient suffering from cataract—before, during, and after the operation"; "Eye injuries, with special reference to the Workmen's Compensation Act, 1906"; "Eye-strain and its consequences"; "The clinical significance of nystagmus." The book is especially useful on the treatment of those cases likely to demand the attention of the general practitioner.

There are 20 plates, some of them in colours and each containing many figures, all good. An appendix includes eminently practical therapeutic notes and formulæ. We have only noticed one misprint in the text. We give the book a hearty welcome, and confidently hope that it will come to be regarded by many practitioners as an indispensable companion.

LECTURES ON SURGERY TO NURSES.

By ALAN H. TODD, B.Sc., M.S. Lond., F.R.C.S. Eng., Orthopædic Registrar, Guy's Hospital. London: Edward Arnold. 1920. Pp. 270. 7*s*. 6*d*.

THIS book is based upon lectures delivered to probationary nurses at Guy's Hospital. It is not a manual of nursing, but aims at giving to the nurse an understanding of the objects and methods of surgical treatment by explaining briefly the elements of pathology and surgery, and thus enabling her to perform her duties with intelligent interest. The lecturer alone can judge whether or not he has succeeded. The first chapter is concerned with the causes of inflammation, and it is difficult to believe from reading it that a probationer could comprehend all that it contains, for it summarises in a few pages pathology which the medical student has but partly learnt at the end of a year's study preceded by an earlier scientific training.

The lectures on other subjects, for example, fractures, shock, the acute abdomen, were probably more easily appreciated since they deal with things which the nurse has before her as solid realities throughout her work in the wards; their importance can be understood without the use of the microscope or such detailed knowledge of anatomy and physiology as the average nurse has no time to acquire. The book is well written in an easy style which makes pleasant reading.

ENCYCLOPÆDIA MEDICA.

Edited by J. W. BALLANTYNE, M.D., F.R.C.P.E. Vol. VI.: Heat Fever to Intertrigo. Edinburgh: W. Green and Son. 1919. Pp. 658.

THE sixth volume of this imposing work appears after a considerable interval. The most important articles in it are those on Heredity, by Professor J. Arthur Thomson; on Hernia, by Sir Berkeley Moynihan; on Injuries and Diseases of the Hip-joint, by Sir D'Arcy Power and Professor Alexis Thomson; on Hysteria, by S. A. Kinnier Wilson, M.D.; on Immunity, by W. M. Scott, M.D.; and on Insanity: its Etiology, by the late A. R. Urquhart, revised by Lewis Bruce, M.D.; its Pathology, by W. Ford Robertson, M.D.; its Nature and Symptoms, by the late G. R. Wilson, M.D., revised by H. C. Marr, M.D., and the late C. A. Mercier, M.D. 121 pages are devoted to insanity, and these by no means exhaust the subject, since we are referred to the five volumes of the Encyclopædia, of which the second edition has already appeared, and are further referred to many articles which will appear in volumes subsequently to be published. The essential defect of books published as encyclopædias, in which subjects are arranged in

alphabetical order and in which the publication of all the volumes is not simultaneous, is thus apparent. The articles above mentioned are admirable in their various subjects, but the sense of discontinuity imparted by the arrangement is at times rather bewildering. For instance, in the article on the General Treatment of Insanity, for a discussion on psychotherapy, which is coming to be regarded as the most important part of treatment, we are referred to a volume far down in the alphabetical list for future publication. Dr. Wilson's article is an exhaustive historical and symptomatic account of hysteria, written with philosophic vision and useful as a corrective to the extreme psychological position which is at the moment tending to become the vogue. With this article it is instructive to read that of Dr. G. F. Still on Hysteria in Childhood, and to have the fruit of his vast experience therein embodied. When the entire Encyclopædia is published any happy owner of a copy will be in possession of a complete treasury of medicine, surgery, and their ancillary sciences, written by masters of their subjects and edited with skill and judgment.

JOURNALS.

Journal of Industrial Hygiene. An Anglo-American Journal. London: Macmillan & Co., Ltd. Published monthly. 30*s.* per year; single copies 4*s.*—Drs. A. Hamilton and G. R. Minot in the June number of this journal have an article upon ether poisoning in the manufacture of smokeless powder. They describe symptoms of acute and chronic intoxication with sulphuric ether which appeared among the workers, some experiencing mental confusion and uncontrollable excitement followed by drowsiness and stupor, others more chronic symptoms of weakness, dizziness, nausea, and depression. The article is of special interest owing to the blood examinations made. Red cells were found to be somewhat more numerous than usual with some achromia and slight but definite abnormal variation in size. White cells were distinctly increased in number, though not definitely in relation to the red counts. Slight anæmia was present, such as may exist concurrently with increased counts of red cells. Ethers are fat-soluble bodies, and in an article by Dr. T. M. Legge in the August issue an account is given of much more pronounced effects caused by other bodies with a lipoid affinity—viz., tetrachlorethane, dinitrobenzene, and trinitrotoluene. The first of these substances, when employed as a constituent of aeroplane dope, gave rise to liver destruction and fatal toxic jaundice. The second, which is used in the dye industry, interferes with the oxygen-carrying power of hæmoglobin, and has been known to cause toxic jaundice. While the last, which is the high explosive T.N.T., so largely used in the war, caused dermatitis of the character associated with exposure to substances which dissolve and remove the natural grease from the skin; liver destruction and toxic jaundice; and blood changes associated with fatal aplastic anæmia.—In the same issue two other unusual forms of industrial poisoning are dealt with. C. I. Reed describes a group of symptoms ascribed to the inhalation of fumes of cyanogen chloride; severe exposure caused "dizziness, nausea, profuse lacrymation, blurring of vision, gasping, coughing, staggering, and prostration that lasted several hours. Chronic symptoms were muscular weakness, lassitude, congestion of the lungs, irritation of the skin, hoarseness, conjunctivitis, œdema of the eyelids, and burning urine." Similar symptoms were produced by injecting dogs with cyanogen chloride dissolved in a solution of sodium chloride.—Dr. G. A. Stephens has an interesting note on cadmium poisoning, which he gives evidence for thinking is the real cause of what has previously been diagnosed as plumbism among zinc-smelters. Appreciable amounts of cadmium were found in the liver in certain fatal cases where lead only existed in traces. Dr. Stephens points out that cadmium is known to be toxic and to belong to a group of heavy metals recognised to be toxic. Fumes of cadmium are given off during zinc-smelting; the symptoms among zinc-smelters previously ascribed to lead are atypical of lead-poisoning, but similar to those ascribed to cadmium. This note is an example of the kind of research which an observant doctor can do in the course of his daily work.

The position in relation to anthrax as an industrial disease is summarised by Dr. T. M. Legge in the July number. This summary is an excellent one; it deals especially with anthrax in the woollen industry and tells of the failure in the past to eradicate the disease, pointing out that "the remedies applied so far have all been directed at treating the effect and not the cause." He speaks hopefully of the future. The only practicable remedy is disinfection of contaminated wool, either at the point of export or at the port of arrival in Great Britain. A satisfactory method of disinfection by using formaldehyde has been worked out in this country; and proposals are now under consideration for employing it on a commercial scale at disinfection stations in such places as Karachi, Bombay, Basra, and Cairo, the centres through which infected wool passes, as well as in England. The cost, some quarter of a million pounds, is to be met by a charge of about 1½*d.* per lb. on the wool disinfected. Adoption of this scheme will, it is hoped, free the woollen industry from the risk of anthrax, an ever constant fear. The writer modestly does not point out that he has been the *fons et origo* of the whole scheme.

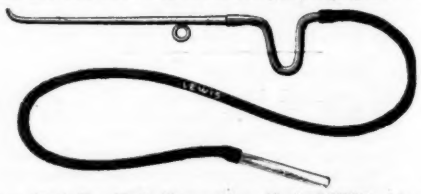
This journal continues to maintain the high standard which it has set before itself. Apart from the special articles to which we are continuing to draw attention from time to time, each issue contains valuable abstracts of current literature. These abstracts, which are conveniently grouped according to subject, are not mere references, but real summaries from which readers can obtain knowledge of contemporary work without having to refer in every case to original sources, which may not be easy of access.

Archives de Médecine Militaires.—In the last number (Vol. LXXII., Nos. 6 to 9) there are complementary articles on bad scars or unsatisfactory cicatrices, by M. J. Voncken and M. O. Jacob. Each author points out that a bad scar is the result of hæmatoma and sepsis, as is proved by the observation that such scars are far more common among men wounded early in the war. They became few when secondary suture arrived, fewer still when primary suture became usual. They are of various kinds: scars of bullet wounds through soft parts; scars disfiguring the face and distorting orifices, as mouth or eye; lastly, scars which hamper or prevent the movement of joints. Scars may ulcerate; they may develop cheloid, which is most likely to arise about deep sutures of relaxation. Psoriasis has been seen on a scar and has spread thence to sound skin. As regards treatment, the chief prophylactic is early mobilisation; but massage and baths should be tried before any operation. Excision is the best treatment, but it is often useful to inject air into the underlying tissues and with this method to join massage. Grafting may have to be done or some operation for sliding the skin along. M. Voncken says these scars are particularly apt to occur when there have been large operation wounds. He asks that in operations to secure thorough drainage angled and stellate incisions shall not be made, but that to get access to some remote pocket a separate but parallel incision be employed. M. O. Jacob adds that he puts the limb, after careful suturing, flexed as much as is required, up in plaster-of-Paris. This awkward position must be kept up for 15 days, and then slightly relaxed every seven days; he promises good results if this method be patiently and exactly followed.

New Inventions.

A USEFUL AURAL ATTIC SYRINGE.

THE number of cases of attic disease presenting themselves at the Ministry of Pensions' Aural Clinics has impressed upon me the necessity for an attic syringe of as simple and convenient form as possible, and I have therefore devised the one shown in the accompanying figure. It will



be seen that the tip is the same as that of Milligan's, but I have adapted it to a U-shaped tube capable of holding about 10 minims of alcohol or other liquid. An indiarubber tube and glass mouth-piece are also provided. The instrument is held by the U-tube and the liquid is drawn up into it by suction with the mouth. It might be adapted to a Milligan's handle, but I have found it extremely convenient to hold it simply by the U-tube. The end-piece plugs firmly into the tube and it has a ring pointing in the opposite direction from the curve of the extreme tip. The position of the tip can therefore be determined with the greatest accuracy and it is capable of being rotated to any desired position. The plug-joint by which the end-piece is united to the U-tube should be secure, but if there is any feeling of doubt with regard to this a thread or string of indiarubber can be passed through the ring and secured round the U-tube. The instrument commends itself on account of the rapidity and ease of use and the facility with which it can be taken to pieces for sterilisation. It can be worked by a syringe instead of the mouth.

The syringe has been made for me by Mr. Henry Lewis, of 2, Westmoreland-street, London, W.

Harley-street, W. JAMES DUNDAS-GRANT.

THE LANCET.

LONDON: SATURDAY, OCTOBER 16, 1920.

Internationalism in Official Formularies.

REPRESENTATIVES from Sweden, Norway, and Denmark, recently met in conference at Stockholm to discuss pharmaceutical questions of common interest. The principal subject considered was the feasibility of compiling a Joint Scandinavian Pharmacopœia, and, although no definite conclusion was arrived at, the conference passed a resolution expressing the opinion that the northern countries should adopt measures to bring their Pharmacopœias into agreement as closely as possible. The larger question as to whether it is desirable and possible to compile an international world-wide pharmacopœia is naturally suggested by these proceedings, for there is no doubt that considerable advantages would accrue to the public as well as to medical men and pharmacists if such an international standard could be set up to control the nomenclature, strengths, and methods of preparation of medicinal substances. The suggestion is no new one, and a certain amount of progress has, in fact, been made in this direction. The British Pharmacopœia replaced the separate official formularies which, previous to 1864, were in use for England, Scotland, and Ireland; further, the compilers of the 1914 edition have included in the text references to various plants and substances suggested by Indian and Colonial authorities, the aim being to produce a pharmacopœia suitable for the whole Empire. In 1902 an International Conference was held at Brussels to discuss the unification of the formulæ of potent remedies. This gathering was attended by delegates from nearly every civilised country, and it led in 1906 to the adoption by the participating States of a series of recommendations concerning the names, strengths, and modes of preparation of about 40 drugs and galenicals, which recommendations have been embodied, more or less completely, in the various national pharmacopœias subsequently issued. As the result of collaboration between British and American authorities, official abbreviations for pharmacopœial products are now given, with few points of difference, in the pharmacopœias of the two English-speaking nations, and these will doubtless be found useful by dispensers in foreign countries.

It may be thought that by working along lines such as those indicated, the compilation of a universal pharmacopœia might be attained. But is such a consummation in reality desirable? Many disadvantages have to be considered. The scheme would necessitate the surrender of cherished national characteristics with regard to both individual remedies and general proceedings in pharmaceutical practice. Limited, or nearly so, to any pharmacopœia, there are a number of remedies which, although they may have no very great intrinsic merit as compared with other more or less similar preparations, would only be relinquished with great reluctance; and space could certainly not be found for all such in an international formulary. We take several illustrations from our own Pharmacopœia: Ammoniated tincture of quinine does not occur in any of the more important foreign pharmacopœias; black mercurial lotion and pill of colocynth and hyoscyamus are official only in Mexico and Japan respectively. Of grey powder, pill of aloes and myrrh, and ammoniated tincture of valerian, all of which have appeared in London and British pharmacopœias of three centuries and are still widely used, only the first-named occurs in as many as two of the other European pharmacopœias, Sweden and Portugal being in this case the countries concerned. In connexion with methods of practice it may be mentioned that while it is found more convenient in this country to measure liquids by volume and solids by weight, on the continent the practice of weighing both liquids and solids is adhered to. Further, the derangement of pharmaceutical industry resulting from such widespread changes in formulæ would be considerable, and the bulk of an international compilation meeting even the minimum requirements of the various countries would be inconveniently large.

We think that the disadvantages attaching to a universal pharmacopœia outweigh the advantages. It is, indeed, open to question whether the needs of the mother-country as well as those of the colonies can be adequately met within the limits of a single volume. Would it not be more satisfactory to compile one or more additional formularies for the use of the dependencies and thus make room in the central publication for additional preparations? There are many widely used remedies of proved reliability which might well be included; novocaine is an example. A number of representatives signing the Brussels agreement of 1906 made reservations on behalf of their Governments, with the result that the agreement has not been carried out in quite as uniform a manner as had been hoped; yet much has been done, and it is our opinion that efforts limited to the elaboration and strengthening of such agreements would be more productive of good result than those directed towards the establishment of one world-wide authority controlling all remedies, potent and otherwise.

Pulmonary Collapse Treatment and Modern Languages.

NINE years ago[1] we wrote of the treatment of pulmonary tuberculosis by an artificial pneumothorax:—

> It is obviously not a procedure to be lightly recommended, and until much more information is forthcoming both in regard to its immediate and remote results, it is impossible to form any judgment as to its value.

The two papers recently published in THE LANCET not only give us "much more information," but one of them, Professor P. BULL'S, in our present issue, carries us a step farther and shows what can be achieved when a pneumothorax proving impracticable, the diseased lung is collapsed by an extrapleural thoracoplastic operation. Professor C. SAUGMAN, who has treated over 500 patients with artificial pneumothorax, finds[2] that if a complete pneumothorax can be established in patients fulfilling the indications for this treatment, 70 per cent. are fit for work from 3 to 13 years after discharge. If only an incomplete pneumothorax is established this percentage is reduced to 11. If cases of both complete and

[1] THE LANCET, 1911, ii., 235.
[2] THE LANCET, Oct. 2nd, p. 685.

incomplete collapse are considered in one group, and compared with cases in which no pneumothorax can be established, he shows that, in the first group, 32 per cent. are fit for work after seven years, whereas in the second group this result is achieved only in 16 per cent. He sums up his verdict on this treatment thus: "I do not know any other treatment that gives third-stage, sputum-positive cases a 33 per cent. chance of being able to work after seven years." In his analysis of 37 cases of pulmonary tuberculosis treated by extrapleural thoracoplasty, Professor BULL shows that by improving his technique he has reduced his operation mortality from 30 to 4 per cent., and that of the 33 patients surviving the operation, 15 "obtained a curative result"—a result enabling many of them to cycle and take other exercise. Professor SAUGMAN has also obtained striking results with extrapleural thoracoplasty, and, as a recent publication[3] on this subject shows, he has performed this operation on 40 patients, 12 of whom were still undergoing sanatorium treatment, and 13 were fit for work. To all with experience of the limitations of every other treatment of far-advanced pulmonary tuberculosis these results must carry conviction. But they have not been lightly obtained. For all the papers reviewed show that only by meticulous attention to detail and prolonged sanatorium supervision has it been possible to snatch success from failure.

It is more salutary than flattering to our self-esteem to realise that in collapse therapy of the lungs we have, as a nation, contributed little of original value, and we have been deplorably slow in utilising the discoveries made by others. Pneumothorax treatment was being practised in the "nineties" in Italy and America, and by 1906 it had been adopted by SAUGMAN in Denmark. Many other countries followed suit about this time, but it was not till 1910 that this country took any interest in the matter, when a young English doctor, whose disease had been arrested on the continent by this treatment, strayed back to England and introduced it at a small private sanatorium. If we study the history of extrapleural thoracoplasty we are confronted by the same humiliating state of affairs. As Professor BULL points out, this operation was first performed in 1903 by CARL SPENGLER. It has grown in favour ever since, and in Switzerland, Germany, and the Scandinavian countries it is well established as an operation calculated to convert a considerable proportion of hopeless into hopeful cases. But in this country, apart from the striking work of Mr. MORRISTON DAVIES, little has been done. Physicians who recognise the value of this treatment complain that they cannot find surgeons in this country skilled in thoracoplasty, and surgeons retort that it is useless for them to master the complicated technique what time that most physicians are too timid or ignorant to advise their patients to submit to the operation. Considering how small the world has become owing to modern facilities for communication, it is amazing that there should still be so long a "latent period" between the origin of certain scientific discoveries and their general recognition.

Could we but flatter ourselves that our backwardness was confined to a highly specialised branch of therapeutics, of value only to a few patients, we might yet enjoy the happiness of self-complacency. But at the risk of further wounding our national pride we would quote the opening lines of a recent review in the Danish journal, *Hospitalstidende*, by Professor ROVSING, the doyen of the Scandinavian surgeons, of an English book on "Common Infections of the Kidneys," published in 1920.

This book is a new proof, added to many others, of the isolation and encapsulation of the British island kingdom from the rest of the world, not least in matters of science. The controversy as to whether infections of the urinary passages usually occur by the blood stream or ascend from the urethra to the bladder and thence upwards, which 20 years ago was waged on the Continent and during which the reviewer saw his theory as to hæmatogenous infection recognised and accepted, seems only now to have reached England, where, undisturbed by earlier investigations on the subject, this question is now being discussed.

Even if a liberal discount be allowed for the natural pique of a reviewer who finds his own investigations ignored, this passage deserves attention, and as similar criticisms are often voiced by other candid friends abroad we should do well to compare the equipment of British doctors with that of their colleagues on the continent. What proportion, we may ask, of specialists in diseases of the lungs and kidneys read other languages than their own? Which of our special hospitals insist on applicants for honorary appointments possessing a knowledge of more than one modern language? Modern languages have, alas, often been degraded in our schools to a status comparable with that of ping-pong and hunt-the-slipper in the world of games. But, it may be asked, does the British specialist with a knowledge of modern languages find time to turn this knowledge to good account? With no other financial support than the revenue from his private practice must he not often concentrate on the bread-and-butter aspect of his profession just at a stage in his career when further study is most needed and would yield the best results? The problem is not easy, but its solution is imperative lest, in certain aspects of medicine, we become the China of the West.

[3] Tubercle, April, 1920

The Position of the Indian Medical Service.

THE valuable Report has just reached us of the Committee appointed by the Secretary of State for India to inquire into the administration and organisation of the army in India, over which Lord ESHER presided.[1] Simultaneously we have received the Report of the Committee, appointed by the Government of India to examine into the reorganisation of the medical services in that country, over which Sir VERNEY LOVETT presided.[2] Both documents should be of first-class value in helping to an early solution of the difficulties attaching to the Indian Medical Service. As all our readers know, the Indian Medical Service has for at least 12 years declined in popularity with the medical profession, and this decline has recently been more marked. Constitutional changes in India, the increased cost of living, the decrease of opportunities for private practice, the difficulty in obtaining leave, as well as the paucity of war

[1] East India (Army in India Committee, 1919-20) Report of the Committee appointed by the Secretary of State for India to Inquire into the Administration and Organisation of the Army in India. London: H.M. Stationery Office. Price 1s. 6d. net.

[2] East India (Medical Services Committee) Report of the Committee appointed by the Government of India to Examine the Question of the Reorganisation of the Medical Services in India. H.M. Stationery Office. Price 1s. 6d. net.

honours and rewards, have had such a depressing effect on the Service that, to quote the words of Lord ESHER'S Report, "the cumulative result has been a steadily increasing difficulty in obtaining recruits of the right stamp from the medical schools of the United Kingdom."

Three separate schemes, under any of which it was hoped that the position could be remedied, have been put forward to meet a bad and worsening state of affairs. First, we have the formation of an Indian Medical Corps to take the place of the Indian Medical Service, and in addition do the work now done by the Royal Army Medical Corps in India; secondly, the transfer of the medical charge of the Indian Army as well as the British Army to the Royal Army Medical Corps, making the Indian Medical Service a purely civil service; and thirdly, the retention of both corps, but splitting the Indian Medical Service into two, one part serving the Indian Army and the other the civil population. Lord ESHER'S Committee finds none of the schemes altogether suited for the requirements of the army on the one side and the civil population on the other, and the reasons given should be studied. The two Reports go thoroughly into questions whose difficulty and intricacy have been exaggerated by the delay in dealing with them. They supply the information upon which a sound and definite plan might at last be undertaken.

International List of Causes of Death.

THE Conference on the Revision of the International List of Causes of Death is the third of its kind, and began at Paris on Monday last. The previous conference, that of 1909, issued the present International List, which was adopted by the British Registrars-General, in common with the greater part of the civilised world. The English "Manual of the International List of Causes of Death" and the "short list" used by medical officers of health are both based upon the International List, the "short list," of course, after condensation, very similar to that used for the "short list" of the United States. Comparisons of British mortality with that of other countries has thus been greatly facilitated. The International List is now somewhat overdue for revision, the original scheme contemplating a decennial revision.

Great Britain and Ireland were not represented at the previous conferences, but the following delegates are attending the present conference: Dr. G. S. BUCHANAN, C.B., Ministry of Health; Sir HUMPHRY ROLLESTON, K.C.B., Royal College of Physicians of London; Dr. T. H. C. STEVENSON, C.B.E., Superintendent of Statistics, Registrar-General's Office, England; Dr. J. C. DUNLOP, Superintendent of Statistics, Registrar-General's Office, Scotland; Dr. N. McI. FALKINER, Superintendent of Statistics, Registrar-General's Office, Ireland. Before leaving for Paris the British delegates have conferred at the Ministry of Health with representatives of various authorities interested in the nomenclature of disease, including the Navy, Army, and Air Force, the Royal Colleges, the Medical Research Council, the London County Council, the Society of Medical Officers of Health, and others. They have also received and considered detailed criticisms from the same sources upon certain proposed amendments of the list.

Annotations.

"Ne quid nimis."

POSTURE IN THE WORKSHOP.

A GREAT deal of importance is rightly attached to the necessity for workers in industrial occupations assuming such a posture that the onset of fatigue is postponed as long as possible. That suitable rest-pauses introduced into the cycle of operations does much to lessen fatigue has been abundantly proved, but it is equally certain that alternative standing and sitting will do even more than the introduction of rest-pauses to bring this about. Many industrial occupations are now carried out standing which can equally well be done sitting, provided the operator be furnished with a suitable chair. An operation such as filing, for example, can be done sitting, provided the chair supplied has foot-rests allowing the left foot to be carried off to the left, so that sufficient body weight may be readily given to the file. The question of good seating has been thoroughly examined by those responsible for the seating in schools, where much prominence has been given to the correct height for the back support, the distance of the seat from the work—that is, from the top of the desk—and to the slope of the table.

The Home Office has recently directed attention to this question in a pamphlet, entitled "Seats for Workers in Factories and Workshops." Several examples of workers' chairs are illustrated, some adapted for use at the work-bench, and others, taking up very little room, which are suitable for attaching to the walls of the workshop or to pillars, where they exist. Since workers vary very much in height, it is essential that the chairs should be adjustable. This can readily be arranged, if the support is of the single pillar type, by a slot and pin, or the screw pattern, similar to that in use on the piano stool, can be employed. To be of use the support to the back should only be slightly sloped away from the vertical, and the support should usually be such as to assist the lower part of the back. For work necessitating alternate standing and sitting, a seat that can be readily pushed out of the way when the operator stands up is essential. The Marshall chair is a good example of this pattern, and it has given valuable results where it has been introduced in the United States by Mr. Frank B. Gilbreth. The device consists of two pillars supporting a pair of rails, which swing about one of the pillars. The seat itself is shaped with sloping front, and is carried on two pairs of small wheels running on the rails. A foot-rest, adjustable in height, is provided along the front of the bench. The worker is able to move himself along the bench with slight pressure from the legs, and, when it is necessary to stand, the seat is forced back and swings away clear of him. This seat has been found extremely useful, since with it crippled soldiers are able to take up bench work where this had been their pre-war occupation.

Seating, if supplied, should prevent the onset of fatigue. This is only done when a healthy posture is encouraged. There must be no reaching too high or too low, nothing that tends to prevent the full expansion of the chest or in any way encourages a cramped position of the body. The essentials of a good chair are as follows: Sufficient depth from front to back; the front edge must be rounded off or sloped, since anything in the nature of a sharp edge may interfere with the blood-supply to the legs, when cold feet ensue; adequate supports for the feet, adjustable at a suitable height; while the seat itself should be adjustable for height, and, where a back support is supplied, this should not be too high or too far out of the vertical.

INFANT HEALTH VISITING IN HUDDERSFIELD.

WE briefly noted in THE LANCET of Oct. 2nd (p. 723) the scheme submitted by Dr. S. G. Moore, medical officer for the county borough of Huddersfield, to his public health department for a concerted attack upon

infant mortality. Dr. Moore is a firm believer in the principle of keeping infants and their mothers together in the home and bringing help to them there. Since this method has been in operation in Huddersfield the infant mortality-rate has been reduced by about 30 per cent., a reduction which Dr. Moore points out compares favourably with that of neighbouring boroughs in which other and more costly means have been adopted. He proposes that one visit per week per child should be paid during the first month of life, two visits per month during the next two months, and one visit per month thereafter, these visits being aided and supplemented by the work of the local Public Health Union. Dr. Moore calculates that this will require three women doctors at a salary of £500 per annum and six nurses at £180 per annum (total about £2700, including uniform), and that nursing material and other forms of help might require another £1000 or so. Dr. Moore is insistent that none but duly qualified and legally registered medical women should be employed on this important task, which consists in large part of overcoming ignorance and prejudice. It is idle, he thinks, to try to eliminate old-fashioned and ingrained mistakes if the would-be eliminator is on an intellectual and social level with the person to whom the prejudice is a religion. We share Dr. Moore's high opinion of the function of medical women in public health matters, but must confess to a little astonishment that he can see no training, other than the full medical course, likely to result in producing efficient health visiting. The scheme has been approved in principle by the Huddersfield Sanitary Authority, and Dr. Moore has been directed to apply it to one-third of the area of the borough. If this is disappointing for the other two-thirds, at all events they will serve as a control to gauge the success of the methods employed.

BENZYL BENZOATE IN ASTHMA.

WE have called attention recently to the value in hiccough[1] and in whooping-cough[2] of a new remedy, benzyl benzoate, discovered by Dr. David I. Macht at the Pharmacological Laboratory of the Johns Hopkins University, which has a remarkable sedative effect on the spasm of smooth muscle and yet is not narcotic. Among the affections in which it has proved useful is asthma. Dr. B. Woloshin[3] has now called attention to the value of hypodermic when oral administration has failed.

He reports the case of a woman, aged 54 years, who came under observation a year ago. She had suffered from bronchial asthma for 14 years, during which time she was under fairly constant medical treatment. Her attacks, which varied in severity and frequence, were as a rule promptly relieved by injections of morphine and atropine or adrenalin. About eight months previously the attacks increased in frequency and severity. Adrenalin no longer gave relief, while the dose of morphine had to be increased. Benzyl benzoate was given in 20-drop doses every four hours by the mouth. She was completely relieved in several days and remained so for two months. Without apparent cause she then suddenly began to suffer severely, being in an almost constant state of dyspnœa. Neither adrenalin by injection nor benzyl benzoate by the mouth gave the slightest relief. For temporary alleviation the hypodermic administration of one-third to one-half a grain of morphine every four to six hours was necessary. This condition continued for about two weeks. She became obstinately constipated, took little nourishment. Her skin was dry, tongue parched, heart action poor, and pulse rapid and weak. Benzyl benzoate was given in 20-drop doses every three hours by hypodermic injection and digalen, 10 drops every four hours, by the same method. At the same time salines and enemata were administered. In three days she was completely relieved, after a week she got up, and ever since she has been free from attacks.

Dr. Woloshin emphasises the value of digitalis in asthma, particularly in long-standing cases, where the resulting dilated right heart, with consequent impaired pulmonary circulation, adds to the sufferer's trouble. Dr. F. R. Mason[4] also publishes a paper on Bronchial Asthma in Childhood. He refers to benzyl benzoate as a harmless antispasmodic which in many cases gives satisfactory results. But it does not relieve all cases, and has the disadvantage of having an unpleasant and lasting taste. In children who are old enough he gives the drug in capsules containing 2 minims four times a day. In the 10 per cent. solution the dose is half a teaspoonful four times a day for a child of 6. Benzyl benzoate is best given continuously to patients having frequent attacks, but this is not necessary in those having only occasional attacks.

[1] THE LANCET, Sept. 4th, 1920, p. 512.
[2] THE LANCET, Sept. 18th, 1920, p. 615.
[3] New York Medical Journal, Sept. 18th. [4] Ibid.

ACTIVITY AND REPOSE.

ALL living organisms have alternating periods of activity and repose. In man the cycle normally is complete in 24 hours; do all members of the animal kingdom manifest a similar 24-hour cycle? J. S. Symanski has made some experiments, recorded in a recent issue of the *Rivista di Biologia*, to determine the question. The animals were placed under conditions as natural as possible in an apparatus which he calls an actograph, arranged to record graphically their movements. As regards periodic activity it appears that there are two main types. In the first or monophasic type, which includes man, bird, goldfish, and fly, a simple 24-hour record was obtained with only one well-marked period of activity and one of rest. These animals are awake during the day and sleep at night. The second type showed in 24 hours more than one active and one reposeful period; this type includes mouse, dog, rabbit, snail, earthworm, and human infant. On the activities of these polyphasic creatures day and night have no marked influence. They orient themselves chiefly by smell and taste in contradistinction to the monophasic "optical" animals, in which the sense of sight is highly developed. The transition from polyphasic suckling, with its prevailing guidance by touch and taste, to the monophasic optical child is an occurrence of great interest. It appears that the more frequent the periodic change, the lighter is the intensity of sleep. Animals of both types exhibit in the 24-hour period one or two periods of activity which seem to be independent of hunger and other stimuli, whether geo-, photo-, or thermo-static; applied during the maximum period of activity these are without effect. The cause of the periodicity must therefore be sought in some deeper internal and as yet undiscovered change in the organism itself, possibly a rhythmical alteration of metabolism.

CLAIMS OF THE VOLUNTARY HOSPITAL.

A RECENT number of the official New Zealand *Journal of Health and Hospitals* indicated that to the people of that well-ordered island, accustomed to adequate and well-equipped hospitals established wherever necessary and maintained out of public moneys, the idea of British hospitals having to close their wards on account of lack of funds was simply amazing. We, too, should be amazed at the present financial position of the voluntary hospitals in this country were we not hardened by familiarity. Sir Napier Burnett is meanwhile doing his best to point out to each section of the community why its support of hospitals is a business proposition, as the phrase goes. In an address which he recently gave to the newly-formed regional divisions of the British Hospitals Association at Birmingham and Manchester he put it to the individual citizen that the hospital has a value to his wife and family and that therefore he should contribute towards its maintenance, whether by a periodical levy or by paying beds. He put it to the employer of labour that the hospital is doing work for the employer of labour which reduces his business expenses from sickness and disablement among his staff. He put it to the insurance companies that the low tariff rates now quoted for life policies are the result of actuarial calculations based in large measure on the voluntary work done by hospitals. He put it to the municipality that the accidents occurring within its area are fed, doctored, and housed in hospital, and that while in compensation cases the lawyer, the doctor giving evidence, and the patient concerned all get paid, the hospital itself goes empty. He put it to the State that such expenses as the provision of new

beds, the equipment of new departments, the cost of training nurses, and the payment of full-time registrars are incurred for the community and should be borne by it. And he ended by suggesting that if the voluntary principle is to be saved it is not because it is an end in itself, but because it has proved in practice to be the best way of mending sick people of their ailments. So far as our experience yet goes, the municipal control of hospitals is more costly and not more efficient than control by voluntary committees. Mr. George Watts, presiding on Oct. 8th at the opening meeting of the Hospital Officers' Association, emphasised the absolute lack of any real coördination between the various voluntary hospitals. Excessive individualism seems to be the only serious failing of the voluntary system, and it can be remedied.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: A NEW OUTLOOK.

THE annual general meeting of the Society of Medical Officers of Health, to be held on Friday, Oct. 22nd, will receive the report of the Council, which conveys the interesting fact that—in accordance with the amended articles of association—the formation of four groups has been sanctioned for the promotion of special interests within the society. The Tuberculosis Group and the Naval, Military, and R.A.F. Hygiene Group are already in working, and their early meetings have been reported in our columns. A Group of Whole-time (Non-County) Medical Officers of Health and a School Medical Service Group are in process of organisation. In regard to the latter, school medical officers are invited to meet at the house of the society on Saturday, Oct. 23rd, at 11 A.M., and those who wish to associate themselves with this group may communicate with Dr. A. Ashkenny, Town Hall, West Bromwich. It is expected that these four groups, and others to be formed later, will play an important part in promoting harmonious coöperation between the various branches of the Public Health Service. The Council puts on record its appreciation of the services rendered to the society by Professor H. R. Kenwood, who is now retiring from the presidency. In his inaugural address two years ago he outlined the scheme of reconstruction which has since been carried through largely as a result of his own personal qualities. On vacating the chair he leaves the society a united body, reinforced in number and reinvigorated for its increased responsibilities as the representative body of the whole Public Health Service.

A PARADOX IN ANTISEPTICS FOR SURGEONS.

TOWARDS the close of his address of welcome to the Congress of Physiology at its Paris meeting, reported in in THE LANCET of Sept. 18th last (p. 600), Professor Charles Richet suggested the study of microbes with a view to the great question of heredity and cognate problems. Several years ago, Richet in experiments on the lactic acid fermentation discovered that excessively minute doses of certain antiseptics—e.g., vanadium chloride—powerfully affected the activity of the ferment organism. This led him to further investigations in connexion with antiseptics to what he calls "*l'alternance des antiseptiques*." The fact standing out clear in the history of antiseptics is that at the end of a certain number of generations a vegetable microbe acquires a certain habit, or, to put it in another way, the microbe becomes accustomed or adapted little by little to live in a medium which previously was poisonous for it. If, for example, a solution of arseniate of potash is used of such a strength that microbes can just live in it, by cultivating their descendants slowly and progressively in slightly increased dosages of the poison, a new race of microbes is obtained habituated to a dosage of arsenic which would be fatal to normal microbes. Similar races of microbes can be obtained and habituated to potassium bromide, thallium nitrate, or copper sulphate, so that the microbes become accustomed to toxic substances. Granting at the end of a certain number of generations this adaptation of vegetable microbes to toxic substances in the culture-medium, it follows that an antiseptic which at first would be effective in showing the evolution of a microbe would cease to be effective or efficacious. A wound with active streptococci treated with phenol on the first day would be almost totally antiseptic. By continuing to use the same strength of solution—at first toxic—little by little the toxic effect is diminished or attenuated, the streptococci become habituated to the solution—at first very antiseptic—and by and by the medium finishes by being inoffensive. It seems necessary, therefore, seeing that the microbe has been slowed in its evolution by an antiseptic, not to employ the antiseptic in stronger dose—a stronger dose would injure the tissues—but rather to use another antiseptic. This fundamental principle Richet calls "*l'alternance des antiseptiques*," and he formulates the paradox "When an antiseptic succeeds, cease to use it," which he believes to be "profoundly true," pointing out that nothing is simpler in therapeutics, seeing that we have at least seven excellent antiseptics—one, as it were, for every day of the week—phenol, sodium hypochlorite, tincture of iodine, silver nitrate, sodium fluoride, creasote, and oxygenated water. Surgeons, he alleges, have a curious repugnance to the application of antiseptics which they are not in the habit of using, and he regards this as a great disadvantage, seeing that the method of "alternance" has proved so useful with regard to internal medicaments, more especially in tuberculosis, where true therapeutics consists in employing successive medicaments. When a medicine has produced a successful effect change it, for its salutary effect is exhausted. Richet goes boldly on and willingly would apply the same paradoxical formula to all therapy. "When a medicine has succeeded well, cease using it and adopt another."

SKIN DEFENCE AGAINST TUBERCULOSIS.

To judge by recent publications, the part played by the skin in the defences of the body against the tubercle bacillus is being more and more recognised and exploited. In Scandinavia and Switzerland actinotherapy is being extended from superficial to deep tuberculous lesions, such as pulmonary tuberculosis, with increasing success. At the Finsen Institute in Copenhagen results little short of the marvellous have recently been claimed for the treatment of even advanced tuberculosis of the larynx by exposures of the whole body to the carbon arc lamp. It also appears that tuberculin has been given a new lease of life by its administration by intracutaneous injection or inunction instead of by subcutaneous injection. Professor Sahli, who even before the war had begun to administer therapeutic intracutaneous injections of tuberculin, has recently reviewed the subject at considerable length.[1] Though he still finds multiple cutaneous inoculation with a "Schnepper"—spring-lancet—practical, especially in the case of children, he considers that the single intracutaneous injection ensures more accurate dosage. He is satisfied that his procedure fulfils the three postulates he has made: (1) That the tuberculin is actually absorbed; (2) that the cutaneous reaction promotes immunisation by the local formation of antibodies; and (3) that the cutaneous reaction is a reliable index to the sum-total of immunity of the whole body. The local skin reaction being more or less a mirror of the whole organism's powers of reaction, the intracutaneous administration of tuberculin can be graded with far more accuracy and far less risk of injurious reaction than is the case with the subcutaneous injection. In a paper on the treatment of all forms of tuberculosis by inunction of Petruschky's tuberculin liniment, Felix Grossmann[2] writes with the conviction of personal experience. He underwent this treatment in a spirit of scepticism fostered by prolonged invalidism, unrelieved by other treatment. His records of several cases read like most other accounts of a new treatment for tuberculosis; they suggest a practically unbroken series of successes. Of greater scientific interest are his references to investigations carried out by Petruschky himself into the absorption by the skin of killed, but not broken up, tubercle bacilli. It appears that within 12 to 24 hours of inunction these bacilli can be found broken up in the

[1] Schweizerische medizinische Wochenschrift, July 1st.
[2] Medizinische Klinik, May 16th.

deeper layers of the skin. The skin, in other words, possesses certain bacteriolytic as well as absorptive properties, and it is suggested that in its transit through the skin the tuberculin is so modified that it ultimately reaches the tuberculous foci in a less toxic condition than does the tuberculin injected subcutaneously. Grossmann, like Sahli, adumbrates the possibilities of wholesale prophylactic measures against tuberculosis by cutaneous inoculation.

"SEEING IN THE DARK."

THE Abbé Spallanzani, amongst his many notable contributions to what in his day was called "natural history," made experiments as to the means whereby bats in their flight in a dark room avoided threads stretched across their direction of flight. Even blinded bats avoided such obstacles. A later observer, Mr. A. Whitaker, in 1906, observed that when the eyes of a bat were obstructed by wax its flight was abnormal, yet it did not fly against obstacles in a room—such as a dozen chairs placed irregularly—and never once even touched anything with the tip of its wings. In THE LANCET of Oct. 2nd (p. 709) we called attention, under the quite inappropriate but attractive title "Seeing in the Dark," to some of the interesting observations and conclusions of Mr. H. Hartridge, of Cambridge, on the avoidance of objects by bats in their flight. The hypothesis advanced is that it is neither by vision nor touch nor by a sixth sense possessed by bats and not by man, but by a specialised sense of hearing in these animals, since the sound-waves of short wave-lengths which they are known to emit are capable of casting shadows and of forming "sound-pictures." In many respects sound-waves are unlike light-waves, but certain sound-waves behave like the waves of light. Both under certain conditions form sharp shadows, obey the laws of reflection, and are reflected from solid objects. "Ordinary" sound-waves of large wave-lengths do not sharply manifest these phenomena, but sounds of very short wave-lengths at or near or above the audible limit for man are reflected and cast shadows with ordinary objects; indeed, even quite small objects and flat surfaces of small superficial area reflect these waves sharply, though "ordinary" sound would not be appreciably deflected. Hartridge suggests that bats during flight emit a short wave-length note, and that this sound is reflected from objects in the vicinity, and this gives the bat information concerning its surroundings. If the path is clear of obstacles no sound-waves are reflected back to the bat's ear. If there are obstacles these will reflect the sound and the bat receives audible warning. If this be so, the bat seems to have solved some of the problems that were generated and partly solved during the war by the elaborate and complicated methods and scientific ingenuity of the physicists. Some of these methods are now available for the location of objects in the directional course of navigation. The *Titanic* disaster in 1912, in all its appalling magnitude, might have been avoided had man been endowed with the marvellous auditory perceptibility of the bat. Animated Nature still holds many secrets which, if unfolded, might give pause to man in his inordinate appreciation of his own abilities and sensory outfit. Considerable success has attended the invention of apparatus for "sound ranging," by means of directional wireless and echo direction. In locating guns in warfare—as an explosion produces a sudden impulse propagated equally in all directions—the physicists used three receivers in known positions, and were able to calculate approximately the location of the guns. A modification of this method was used for obtaining the location of a ship at sea. But, granting location, there still remains the question of the position of rocks, icebergs, and derelict wrecks that may occur in a ship's course, comparable to the obstructions in the obscurity of a bat's flight. By the application of echo direction and sonic and high-frequency acoustic methods—of sound-waves 5000–10,000 periods per second, and therefore far below the shortest wave-periods audible by man—much has been achieved. When such a beam of sound of high frequency, comparable to a searchlight, falls upon an obstacle, it is reflected or echoed, and the echo is detected by a hydrophone—a method that has proved very successful with sharp directional indication, in the case of rocks and ships, but not yet for icebergs, as the elastic properties of ice approximate to those of water. But even the sense of direction in man has been made use of during the war for estimating the position in space of objects emitting sound-waves, but, as Hartridge points out, under ordinary circumstances it is necessary to increase greatly the effective distance between the ears in order to obtain the required accuracy. With sounds of short wave-length it is highly probable that bats are able to estimate the position in space of an object ahead of them with considerable accuracy. The following facts are adduced as fitting in with this hypothesis. Bats are known to emit short wave-length sounds near the audible limit of man, and above that of some people. Bats have finely developed movable and sensitive pinnæ, and marked acuteness of hearing within a certain wave-length range. Whitaker has shown that bats are not disturbed by man's speech, but are greatly disturbed if the hands are clapped together or paper is torn, the latter causing them to decrease their speed of flight and to commence "fluttering"; the presumption is that while man's speech is below their audible limits, the sound emitted by the clapped hands or torn paper reaches their range and disturbs the acuteness of audition that is directing their flight. Even if the alliterative tag "blind as a bat" is not true, it is obvious that this crepuscular mammal is endowed with distance receptors which man himself may well envy.

MEDIASTINAL LIPOMA.

ACCORDING to Dr. Raymond S. Leopold[1] of Philadelphia, who reports a case of mediastinal lipoma, records of primary tumours of the mediastinum are remarkably scarce. His patient was a man, aged 37, whose symptoms were a persistent cough, increasing in severity and accompanied by shortness of breath and later by pronounced dyspnœa. Physical examination and X rays nine months after the onset showed a tumour filling about four-fifths of the chest. There was no pain, emaciation, or cachexia, metastases, dysphagia, or aphonia, but the slightest exertion produced distressing attacks of respiratory embarrassment, and death, which took place after about 15 months' illness, was preceded by numbness of the arms, mental torpor, and finally a struggle for air. The necropsy showed the thoracic cavity to be almost filled by a lobulated mass which compressed the lungs against the vertebral column, and on section was found to consist of pale yellowish fatty tissue. Its weight was 17 lb. 6 oz., and its measurements 31 by 30 by 15 cm. Although several cases of teratoma, fibroma, dermoids, and other tumours of the mediastinum have been recorded, Dr. Leopold could find only four other cases of mediastinal lipoma in the literature. In Beatson's case a lipoma about the size of an orange, which presented just above the manubrium, was removed from the superior mediastinum of a man aged 45, in whom it had been increasing in size for five years without causing any inconvenience. Hare's three cases, in which, as in Dr. Leopold's case, dyspnœa was a prominent feature, all ended fatally.

AN anonymous Fellow of the Royal Society of Medicine has enabled the society to institute a gold medal, which will be bestowed once in three years and will be open to medical men throughout the world. The gift was not made in connexion with the war, but the hope was expressed that the first award might be made with special regard to valuable war services, and the presentation will, this year at least, be made on Armistice Day. The first recipient of the honour is to be Sir Almroth Wright, to whom the medal will be presented at 5 P.M. on Nov. 11th, at the society's house, 1, Wimpole-street, London, W. Sir John Bland-Sutton, President of the Royal Society of Medicine, will make the presentation, and Sir Almroth Wright will deliver an address on Medical Research.

[1] Archives of Internal Medicine, Sept. 15th, 1920.

BRITISH AND AMERICAN SURGEONS:

PRESENTATION OF THE GREAT MACE TO THE AMERICAN COLLEGE OF SURGEONS.

THE keen observer of current medical thought cannot fail to have noticed many tokens of the growing intimacy between British and American surgery and those who practise it. The most significant event took place early this week. On Monday, Oct. 11th, the Great Mace, given by the consulting surgeons of the British Armies to the American College of Surgeons to commemorate their mutual work and good fellowship, was presented by a special deputation consisting of Sir Berkeley Moynihan, Sir William Taylor, of Dublin, and Mr. A. Carless. The first-named read the following letter from Sir Anthony Bowlby, President of the Royal College of Surgeons of England, who had intended to be present but was prevented from so doing.

Letter from Sir Anthony Bowlby.

DEAR MR. PRESIDENT,—The hospitality which I enjoyed at the meeting of your College in October, 1919, makes me regret all the more deeply that my duties in England prevent me from joining you again this year at Montreal.

The feelings of affectionate regard entertained by British surgeons have found expression in the creation of the "Great Mace," which has been designed in order to commemorate "our mutual work and good fellowship in the late war," and is a gift from the consulting surgeons of the British Armies to the American College of Surgeons. Much thought has been given to the various emblematic devices which decorate it, and we trust that it may be found worthy of acceptance and of a place in your College buildings at your annual meetings.

The Mace has always been the emblem of "authority," and, as the American College of Surgeons is now the chief surgical authority on your continent, we hope and believe that our gift is a suitable one.

The names of the 54 donors will satisfy you that all parts of the British Isles and of the Overseas Dominions are represented, and that surgeons who served in Italy, in Salonika, in Egypt, and in Palestine have joined with those whose work lay in France and Belgium and at home.

The representatives who have been appointed to convey the Mace to Montreal will assuredly convey to you also the hearty good wishes of all the donors for the continued prosperity of your College, and I can assure you that all of us are animated by the most ardent desire that the good fellowship of the workers in the Great War shall be continued through innumerable years of peace.

May I ask you to convey to all the Fellows of the College, and especially to my personal friends, my own most cordial good wishes, and may I also offer to you the hope that your presidential year will be one of great success in advancing the science and art of surgery.

Yours very truly,
ANTHONY A. BOWLBY.

Royal College of Surgeons of England, Lincoln's Inn-fields, London, W.C. 2, July, 1920.

Sir Berkeley Moynihan's Address.

Sir BERKELEY MOYNIHAN, on presenting the Mace, said:—

Three centuries ago on this very day a little sailing vessel, leaving England far behind her, was struggling against adverse winds and heavy seas towards America. On board were 100 pilgrims fleeing from civil and religious tyranny to seek sanctuary and freedom in a new land. No voyage in history has been so fateful. Those who journeyed in that vessel, a chosen company on the horizon of your history, were the best of English stock. They helped to found here a small colony of people, grim and stoical in spirit, yet touched with idealism.. Though all the great countries of the earth have since given of their best to build your nation, those few pilgrims have left their indelible stamp upon the culture, the institutions, and the laws of this land. Almost a century and a half ago that colony broke away from the mother country, with which it was long at war. But 100 years of peace between the two nations had been celebrated when in 1917 they stood together in arms. War is the Great Revealer. We learnt in that great testing time of our race that ties of blood, when they mean kinship in spirit and an equal surrender to the noblest impulse, are never to be broken. In the Great War America and Britain mingled their blood upon the same stricken field. The hope then grew strong in many hearts that a new understanding, born of comradeship in battle, fiercely tested in the furnace of affliction, and sealed in death, would redeem all ancient blunders, blot out the bitter

THE GREAT MACE PRESENTED TO THE AMERICAN COLLEGE OF SURGEONS BY THE CONSULTING SURGEONS OF THE BRITISH ARMIES.

memories of wrong, and lead at last to a supreme and permanent reconciliation. For we seemed then to realise that deep down in the hearts, enthroned in the conscience of the two peoples there was the same full eager devotion to eternal principles, love of justice, joy in liberty, hatred of oppression; the same unselfish determination to strive for the redemption of mankind, and to establish anew the freedom of the world. On the fields of Flanders and of France as in the cabin of the *Mayflower*, humanity recovered its rights.

In the grave and anxious days of war, when we fought so long in fellowship, no associations were closer, no friendships more swift and intimate, no joint labours more fruitful than those of our profession. We then gained each for the other, not respect and sympathy alone, but true affection also. Every lover of his country, every lover of humanity must wish that the spiritual alliance then created shall endure to the end of time. In our desire to perpetuate the remembrance of those days of duty done together we, the consulting surgeons of the Armies of Britain, ask the College of Surgeons of America to accept this Mace. We pray that you may regard it as a symbol of our union in the harsh days of trial; as a pledge of our devotion to the same imperishable ideals; as a witness to our unfaltering and unchanging hope that the members of our profession in the two lands shall be joined in brotherhood for ever in the service of mankind.

The Donors of the Mace.

The following is a list of the consulting surgeons of the British Armies who gave the Great Mace to the American College of Surgeons:—

Sir Charles Ballance, K.C.M.G., C.B.; Sir Hamilton Ballance, K.B.E., C.B.; Sir Gilbert Barling, Bart., C.B.; Seymour Barling, C.M.G.; Sir Anthony Bowlby, K.C.B., K.C.M.G., K.C.V.O., D.S.M. (U.S.A.); Dr. H. A. Bruce; F. Burghard, C.B.; H. Burrows, C.B.E.; A. Carless, C.B.E.; Sir A. Chance, C.B.E.; C. C. Choyce, C.M.G., C.B.E.; Sir Kennedy Dalziel; R. Davies-Colley, C.M.G.; T. P. Dunhill, C.M.G.; Dr. J. M. Elder, C.M.G.; Sir Crisp English, K.C.M.G.; H. A. Fairbank, D.S.O.; C. H. S. Frankau, C.B.E., D.S.O.; Forbes Fraser, C.B.E.; Sir Peter Freyer, K.C.B.; A. Fullerton, C.B., C.M.G.; George Gask, C.M.G., D.S.O., D.S.M. (U.S.A.); Sir Henry Gray, K.B.E., C.B.; Sir Robert Jones, K.B.E., C.B., D.S.M. (U.S.A.); R. E. Kelly, C.B.; Sir Arbuthnot Lane, Bart., C.B.; Sir William Lister, K.C.M.G.; V. Warren Low, C.B.; Sir George Makins, G.C.M.G., C.B.; Sir Arthur Mayo-Robson, K.B.E., C.B., C.V.O.; A. B. Mitchell, O.B.E.; Sir Berkeley Moynihan, K.C.M.G., C.B., D.S.M. (U.S.A.); Sir Thomas Myles, C.B.; T. H. Openshaw, C.B., C.M.G.; Colonel A. Pilcher, C.B., D.S.O.; Owen Richards, C.M.G., D.S.O.; Sir Hugh Rigby, K.C.V.O.; Percy Sargent, C.B., D.S.O.; James Sherren, C.B.E.; Maynard Smith, C.B.; Thomas Sinclair, C.B.; Sir Harold Stiles, K.B.E.; James Swain, C.B., C.B.E.; Sir Charters Symonds, K.B.E., C.B.; Sir William Taylor, K.B.E.; Sir John Lynn-Thomas, K.B.E., C.B.; Alexis Thomson, C.M.G.; Sir William Thorburn, K.B.E., C.B.; A. H. Tubby, C.B., C.M.G.; H. Wade, C.M.G., D.S.O.; Sir Cuthbert Wallace, K.C.M.G., C.B.; Sir Charles Gordon Watson, K.B.E., C.M.G.; A. Webb-Johnson, C.B.E., D.S.O.; Sir W. de C. Wheeler.

Description of the Mace.

The Mace has been designed so as to tell in symbolic language of the close union between British and American surgery and of the ties which unite Great Britain to Canada and to the United States of America. It retains the traditional shape and proportions of the Civic Mace of the seventeenth century, and is of hand-wrought, chiselled and repousse silver gilt.

The *dedicatory inscription* engraved on the plate under the crown sets forth that it is a gift "from the consulting surgeons of the British Armies to the American College of Surgeons, in memory of mutual work and good fellowship in the Great War 1914–1918."

The *crown-shaped finial* is formed of six rich scroll buttresses upholding the "Sacred Flame of Science" issuing from a mortar of antique pattern, the model of which was recently found on the field of battle near Salonika. These buttresses spring from a cresting composed of alternating maple leaves and American eagles intertwined with the Serpents of Esculapius; while the position usually occupied by a band of jewels in a monarchal crown is filled with the words "The American College of Surgeons."

The *body or head* is divided into six panels by the Winged Caduceus, being an ornamental rendering of the badge of the United States Army Medical Corps. The panels set forth the following "Achievements at Arms" in delicate and finely detailed repousse work:—

1st. The full Blazon of the United States of America.
2nd. The Dominion of Canada.
3rd. The College of Surgeons of England.
4th. The Badge of the Royal Army Medical Corps.
5th. The Shields of Arms of John Hunter and Lord Lister.
6th. A cartouche bearing the words "Philip Syng Physick, 1768–1837, Father of American Surgery."

The lower portion of the head is decorated with a symbolic band of water indicating the ocean which both unites and separates America and the Mother Country. The latter is symbolised by the British lion brackets of highly chiselled work which support the head and terminate the upper part of the staff. The talons of the lion's feet grip the hammered decoration of the upper knop, which consists of a design of American and Canadian maple seed-pods and heart-shaped spaces. This hammered work is protected by boldly projecting, solid, jewel-like bosses of chiselled work.

The *staff* is decorated with a free design of the national floral emblems of the United Kingdom—the rose, the thistle, the shamrock, and the leek. Intertwined among these are a number of ribbon scrolls, each one of which bears the name of one of the donors.

The *foot* bears, as decoration, the root form from which the above spring, and a series of six small shields which may be used for possible future arms or inscriptions. The extreme bottom knop is fluted with leaves of *Isatis tinctoria*.

The various parts are held together in the traditional manner by a rod of English oak, cut from a tree grown at Wytham, Berks. The extreme length is 3 ft. 11½ in., and the weight of silver is 140 oz. troy.

The Mace was designed and made by Omar Ramsden, who has also embodied some suggestions of the donors.

HUMAN EFFICIENCY IN THE TEXTILE INDUSTRY.

THE publications of the Industrial Fatigue Research Board are becoming more frequent as the Board settles into its stride. They are being grouped as they refer to this or that trade or industry under investigation. Three reports have recently been issued dealing with inquiries conducted in textile factories. The first[1] is a survey concerned with the relative importance of the human and mechanical factors in various branches of the cotton industry. The principle is accepted that, where large individual differences in production exist, the mechanical factor is by no means predominant, and that in such cases modification of the human conditions of employment may result in increased efficiency, prosperity, and comfort. And conversely that a very small mean variation in the output of individuals denotes a probable overwhelming influence of the mechanical factor. "A machine of predominant influence diminishes the expression of individual differences, in fact, there seems to be an inverse relationship between the influence of the human and mechanical factors. Yet individual differences will exist as long as human labour is necessary for industrial processes." Mr. S. Wyatt, author of the report, found that the human factor became steadily more important as the cotton passes from the early process of spinning to the final process of weaving. In the process of mule-spinning, for instance, "the part played by the operative is very small compared with the overwhelming influence of the machine, and the necessity for taking into consideration the existence of individual differences is proportionately reduced"; and in ring-spinning the "process is not conducive to the expression and development of individual differences in ability, but tends to reduce the human factor to comparative uniformity and insignificant proportions." On the other hand, the processes of winding and weaving were found to give opportunities to individual workers to express themselves. Differences in output were considerable, indicating the importance of human variability and skill and the need for longer apprenticeship. But, Mr. Wyatt remarks, "at the present time the duration of the period of apprenticeship seems to have a purely empirical basis and does not appear to be accurately adjusted to the conditions and requirements of the various industries." This report, which is of considerable interest, well written, and clearly expressed, acts as an introduction to later reports.

The Optimum Pace of Bobbin-winding.

The second report,[2] also written by Mr. Wyatt, is based upon an intensive inquiry into the process of bobbin-winding, which is the last process in a spinning-mill before the cotton yarn is passed on to the weaver. The process is one of those in which the human element had already been noted in the preliminary inquiry to be important. The process is described and analysed into 40 regular and five occasional operations, each of which were carefully timed. "The impression gained on observing the winders at work was that they were constantly working at a high pressure, and, although it is generally the case that the operative who appears to be working hardest actually produces the least output,

[1] Individual Differences in Output in the Cotton Industry. Textile Series No. 1. Industrial Fatigue Research Board. 1920.
[2] Some Observations on Bobbin-winding. Textile Series No. 2. Industrial Fatigue Research Board. 1920.

even the best of the winders appeared to put considerable energy into the work." The work due to the absence of rhythm and the frequent repetition of uninteresting movements may be styled as monotonous, "although not regarded with distaste or absolute boredom" by the operatives. A winder was found normally to walk backwards and forwards in front of a frame with 100 spindles, rather less than a mile and a quarter each day; but when the spindles were experimentally reduced to 80 her efforts to speed up resulted in her traversing over six miles daily, and even then the output was less by 10 per cent. Hence, in order to obtain greater output per operative with the production of less fatigue, winders should be given a larger number of spindles and be permitted to adopt their own pace of work.

Naturally, different types of yarn take different times to wind. But the human factor is always present and "the experience gained by observing the winders at work and the information obtained as to their personal characteristics suggest that the differences are not entirely due to differences in skill or fatigability, but to temperamental differences in attitude towards the work. Some winders at all times of the day or week seem to treat the work with a certain amount of indifference. Others differ in the power to sustain attention and are distracted by the least provocation." The report contains a careful description of the conditions which prevailed in the factories where the observations described were made, and certain suggestions are put forward by which changes in organisation and in the design of machinery may be expected to improve work. Stress is also laid upon the value of vocational selection. This report is an interesting example of what can be done by intensive study of industrial processes.

Effect of Illumination on the Silk-weaver.

The third report[3] in the series deals with the process of weaving in the silk industry. The investigator, Mr. P. M. Elton, made his observations in two mills, differing markedly one from the other. The first was a modern factory, up to date in nearly every way. The second was an old silk mill in Cheshire, with narrow rooms and inferior lighting. In this investigation considerable attention was paid to the effect upon output of natural lighting as contrasted with artificial lighting. The inquiry was conducted between December and April, at a period of the year when daylight was becoming steadily stronger and stronger. In proportion as daylight hours increased so did the output at both factories, but not quite in the same way. In the newer factory in the winter days output was less per hour at the beginning and at the end of the day; by April, when artificial light was no longer required, the output of the early and late hours increased, so that the output of the whole day maintained an approximately even level. In the older factory artificial light was often required in the winter, even at mid-day; as the days lengthened artificial light was not required mid-day, the output of these hours in consequence increased, and the effect of lengthening the daylight hours was to raise the output in the middle of the day, so that the daily curve of output became more and more peaked. The interesting conclusion is drawn that "under artificial illumination production falls, even if electric light of sufficient intensity is provided. The magnitude of this fall is of the order of 10 per cent. of the daylight value of the rate of output. Every unnecessary hour under artificial light means a direct loss of production, and makes the task of the worker more difficult than it need be." Another point which may influence the question is that when workers start the day with artificial light the pace of work suited to the illumination is adopted and is prolonged into the daylight hours. Mr. Elton points out that while workers are frequently blamed for losing time there is another aspect of the case, since "much time is lost in many silk mills to-day, and the weavers therein are subjected to needless mental stress in consequence of the failure of works managers to make it possible for the weavers to spend all the time they are at the works in making cloth." An effort was also made to estimate the effect of temperature upon work. The limits, however, within which the observations were made, between 58° and 65° F., were small. Nevertheless, there was found a definite correlation which indicated that as the temperature rose the output increased. In this investigation also "the results obtained afford here evidence of the fact that in the process of weaving the human factor has a most powerful influence on the output obtained," which again stresses the importance of paying more attention to workers and their environment than has been done in the past. This report contains more detail than the second, and in it are given various suggestions which those interested in the textile industry should read and profit by.

[3] A Study of Output in Silk-weaving during the Winter Months. Textile Series No. 3. Industrial Fatigue Research Board. 1920.

CONTROL OF VENEREAL DISEASE.

Manchester's Antivenereal Poster.

PROTESTS have been made to the Manchester City Council by certain associations of citizens, including that for moral and social hygiene, the Y.M.C.A., and St. George's Association, against some features of the corporation's scheme to prevent the spread of venereal diseases, and especially against the official poster that has been exhibited in public places. Dr. J. Niven, the medical officer of health, at the invitation of the hospitals subcommittee of the health committee, has prepared a reply which will be considered by the health committee. Dr. Niven at the outset emphasises the fact that the Royal Commission on Venereal Diseases adopted as their principle that these diseases, as far as practicable, should be treated on the same lines as other infectious diseases. From that it follows that the public were to be freely canvassed as to the dangers, modes of prevention, and means of cure which were to be adopted. It cannot, he adds, be denied that moral suasion has been abundantly invoked both before and since the issue of the Royal Commission's report, doubtless with some degree of success. But in spite of the advocacy of continence by army chaplains and other officers, there has been a great extension of venereal disease in the ranks. That class of the community which is not affected by moral teaching has to be reached, if venereal disease is to be materially reduced. The system of clinical centres established by the Ministry of Health did not suffice by itself to prevent the spread of venereal disease, and accordingly as a first step early treatment centres have been established, and Dr. Niven has evidence that the operations of such a centre in Manchester are useful, although strict proof is naturally difficult to obtain. Large numbers of men for various reasons would never think of going to a centre, and it became necessary to consider whether they could be protected.

Dr. Niven meets some of the objections raised as follows:—

Objection 1.—The poster of the corporation does not sufficiently emphasise the need for purity of life.

Reply.—Perhaps this is by reason of the qualification that purity of life does not always protect against venereal disease. That, however, is a necessary qualification if one is to state the strict truth. Purity of life is the greatest safeguard; but too many have found it inadequate as a protection.

Objection 2.—Such a poster as the corporation has put up is an encouragement to vice, assuming, as it does, that sexual indulgence is a thing of little moment.

Reply.—One would have thought the reverse was the case, reminding the public, as it does, that promiscuous intercourse is fraught with danger, a fact which only too readily slips from the mind of the young. But it is considered that the safety which may be obtained by carefully following certain directions removes a deterrent to sexual vice. This is more than doubtful. The mere fact that certain steps must be taken in a definitely prescribed manner acts rather as a check than otherwise, and only those bent on giving the rein to their passions will take the necessary trouble. The deadly thing is the inertia which prevails in regard to venereal disease. This will be seen from the fact that only about two men per diem have applied at the Public Health Office for a copy of the directions. The truth seems to be that there is at present a high tide of licence, which requires much greater efforts to check it than have hitherto been adopted.

Objection 3.—It is contended that measures of personal disinfection are futile, and that all the proceedings adopted will only end in an increased spread of infection.

Reply.—It is not apparently disputed that at various periods during the war the adoption of personal precautions reduced the incidence of venereal disease to small dimensions, when the necessary materials were supplied and thorough instruction was given.

Dr. Niven concludes that morals will not be debased by the judicious promulgation of these instructions, but that, on the contrary, the fear of the disease and the need for careful disinfection being kept before the public there will be a degree of restraint that does not now exist. He agrees that a campaign should be vigorously carried on to impress upon the community the terrible consequences of irregular sexual indulgence, both in its effect on character and on the whole framework of society. But he considers this to be the function of spiritual guides, while the public health authority is concerned rather with the measures which must be adopted to avert disease and physical deterioration.

The Attitude of the S.P.V.D.

The honorary secretary of the Society for the Prevention of Venereal Disease informs us that his Society was invited by the National Birth-rate Commission to send two delegates to a Special Committee appointed by the Commission to inquire into certain aspects of venereal disease, and also to send witnesses to give evidence before the Commission. Both invitations were declined on the ground that as the views and evidence of the Society on the matter had been published widely and submitted to the Ministry of Health, no good purpose could be served by meeting delegates from the Ministry of Health and National Council for Combating Venereal Disease and reiterating opinions which are already fully known.

Compulsory Notification of Venereal Disease.

At the last meeting of the Plymouth Port Sanitary Authority a letter was read from the Tees Port Sanitary Authority urging the necessity of compulsory notification of venereal disease. Dr. W. C. Hamilton moved that the committee did not agree with compulsory notification, and this motion was passed.

TUBERCULOSIS.

Liverpool Training Colony.

THE Training Colony for Tuberculous Ex-Service Men has recently been started at Delamere Forest, near Frodsham, in connexion with the Liverpool sanatorium. In accordance with the policy adopted by the Ministry of Health, as instanced by the arrangements made between the National Association for the Prevention of Tuberculosis and the Ministry when formulating the scheme for the Burrow Hill Colony, near Frimley, the training colony is associated with a sanatorium. The initial expenses of the colony are being largely defrayed by a citizen of Liverpool, who wishes to remain anonymous; the Ministry is adding 40 beds. Most of the men have, or have had, tubercle bacilli in their sputum. Buildings separate from the sanatorium are provided; the beds are arranged in cubicles. Every detail has been carefully thought out; the wall surfaces are smooth and the skirting angle rounded. Every man in the colony takes part in the gardening; enough work is available to make him healthily tired, both physically and mentally. In addition a training course in watch- and clock-repairing is in being. The authorities hope to arrange with the watch-making trade that 12 months' training in the colony working six hours a day for 3½ days a week shall be held equivalent to six months' training in the workshop. On leaving the colony the men are given a watch-maker's kit of tools, worth £12. When the men have had sufficient training they will be accepted by the Trades Union, and should be able to earn an agreed wage of £6; helped out by an allotment they should be able to earn a satisfactory living. The Ministry, profiting by the analogous Belgian experience of training disabled soldiers at Port Villez, requires training colonies and farm colonies at its disposal for tuberculous ex-Service men, these to be in the vicinity of sanatorium beds available for men whose training is interrupted by illness. It is hoped to initiate a course of tin-smithing shortly, but the difficulty which has been overcome at last in connexion with the watch-making course—that of finding a competent instructor—is still holding up the course. Training in forestry is available; the men can be taught the use of the adze in 12 months. Negotiations are in progress which it is hoped will provide the trained men with employment at the Crown forestries near the colony. Blacksmithing is considered a suitable occupation in which to train the men; the increasing use of machinery in agriculture ensures the men finding work on the land. The discipline of the patients, so essential in an institution of this nature, is being tempered with sympathy by the medical superintendent, Dr. A. Adams. The colony is certainly being run on the right lines as far as we know them at present, and represents a whole-hearted attempt combining private generosity and State assistance to discharge a part of the debt we owe to the men and boys who risked their lives in the war.

Sanatorium Unrest.

In the twenty-first annual report of the Society for the Prevention and Cure of Consumption in the county of Durham, Dr. J. Gray voices a complaint with which the medical superintendents of institutions for the tuberculous are familiar. He writes of his patients:—

"They mostly seem desirous of returning to their old environments, where they can have unrestricted freedom. ..... After an absence of five years I am much impressed with the fact that, speaking generally, there does not seem in the average patient the same old fixed determination to get well, which means there is the corresponding difficulty on the part of some of the patients to conform to the disciplinary restraint of sanatorium treatment. This fact and the consequent unsettled mental state of most of the patients (who are admitted not of their own free will), combined with shorter residence, in my opinion, has something to do with the fact that the same state of physical fitness is not reached as in pre-war times."

Dr. Gray's experience being typical of most medical superintendents in charge of sanatoriums, would it not be well for an impartial investigation to be made into the causes of this unrest, and into the possibilities of their removal, before costly and extensive schemes are launched for the permanent settlement of consumptives in industrial colonies?

Cost of Sanatorium Treatment.

In the annual report of the National Sanatorium Association for the year ending Dec. 31st, 1919, an instructive account is given of the average cost per patient at Benenden Sanatorium, Kent. The analysis shows that the average cost per week was £2 14*s.* 8*d.* As the amount charged for each patient was only £2 2*s.* per week for the first nine months, and £2 5*s.* per week for the remaining three months, there was an excess of expenditure over income. It would be instructive if every institution for the tuberculous were to follow the example of Benenden in publishing the working costs per patient, but safeguards would be required to prevent such a comparison degenerating into a cheese-paring competition conducted at the expense of the patient.

Surgical Tuberculosis at the Leasowe Hospital.

In a well-written and illustrated account of the Liverpool Hospital for Children, Leasowe, Dr. T. Hartley Martin reviews the most recent developments of this institution for the treatment of surgical tuberculosis. He finds that heliotherapy is the most important adjuvant measure and the one most universally employed. X-ray therapy, and more recently chemotherapy, have proved of value in dealing with the more superficial manifestations of the disease, and vaccine-therapy has been found to be helpful when extensive sinus formation is complicated by mixed infection. Massage is employed in the subacute and convalescent stages of the disease to allay the muscular wasting resulting from the enforced inaction of recumbency. It is encouraging to find that since the formal opening of the first 100 beds in 1914 there has been a rise in the percentage of cases discharged as cures. This improvement is largely due to the cases with marked deformity and long-standing sinus formation, being comparatively fewer than at the opening of the hospital. The actual percentages of "disease arrested" were 73 in 1918 and 78·3 in 1919.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Census of the Cases of Sexual Disease in Austria.

THE Austrian Board of Health intends to arrange a census of all the cases of sexual disease in this country, in order to place the fight against these conditions on a better basis with more expectation for a good result. The time for this census is fixed from Nov. 15th till Dec. 14th of this year. All practitioners in Austria (there are at present 6006) will receive forms for this purpose with the request to fill them in. The professional secrecy will be guarded in the utmost degree, the names of the patients not being disclosed to the authorities. Thus neither the doctor nor his patient will suffer any inconvenience from this census. In Vienna, where there are 3448 practitioners for 1,800,000 inhabitants, or one for 520 persons, the preliminary arrangements have been made already; in the country they will soon be working in full order too.

Unsatisfactory Conditions of the Old Military Hospital in Vienna.

With the "break-up" of our Empire also the army has been broken up, and the numerous buildings and institutes formerly occupied by this once imposing organisation have now become vacant and are to be used for other purposes. Foremost amongst them stands the "Garnisonspital," or hospital for the Vienna garrison, an extensive building some 150 years old. It was intended by Government to be used to enlarge the existing General Hospital ("Allgemeines Krankenhaus," well known to all medical students in Vienna), and thus to do away with the complaint about lack of beds and wards. But there is really a scarcity of hospital beds in this city, especially now that the general morbidity and incidence of illness is alarmingly high. A commission consisting of leading physicians of the General Hospital investigated the conditions prevailing in the "Garnisonspital," and has published the conclusions arrived at. This report forms interesting reading. It is a formidable attack and sentence upon the former military system, and shows how the previous regime neglected even the primitive requirements of modern views of hygiene to the detriment of the army as well as to its own disadvantage. With the exception of a modern ward for cases of mental disease and for infectious patients, all wards and departments of the hospital are far below the standard of the worst public hospital in this city. In the wards there are no arrangements for heating water, no sinks, no isolation rooms, the w.c.'s are terribly widely distributed, much too few in number, and in a deplorable condition; the surgeon cannot wash properly in the wards, he cannot sterilise his instruments there. No attention had been paid to the needs of patients requiring quiet or comfort after severe operations; bathing arrangements were inadequate, the drainage of the building was most primitive and faulty. Some of these faults could be concealed as long as the hospital was under military management, for there were abundant attendants and hospital servants costing practically nil. But for a private hospital such conditions would be really impossible. In distinct contrast to the neglect of the needs of the living, the dissecting department, as well as the bacteriologic-histologic laboratory, was found quite up to date. The fundamental drawbacks of the building are of such a nature and extent that it would cost fabulous sums to adapt it, and fit it for attachment to the General Hospital. It is simply astounding that, in spite of these antiquated conditions, medical service for the diseased soldiers could be kept at the high level attained by our Army Medical Corps before and during war-time.

Winter Term of the Medical Faculty.

The programme of the winter term has just been published, covering the term from October, 1920, till April, 1921. During this time no less than 507 classes and lectures will be given by 21 ordinary, 120 extraordinary professors, 174 *privat-docents* (lecturers), and assistants. Out of this number the following may be mentioned, showing that medical teaching is regaining its footing in spite of the adverse conditions hampering it hitherto. There will be 10 lectures on physiology, 14 on anatomy and embryology, 21 on pharmacodynamics, 92 on materia medica, 22 on rhino-laryngology, 28 on otology, 13 on radiology, and 5 on special chemistry. The remainder will deal with surgery, pathology, gynæcology, ophthalmology, and dermatology, including syphilis. In the last (summer) term the medical students at the University numbered 3409, amongst them being 530 females. Of the total, 111 were foreign students, mostly qualified doctors from abroad (America, Holland, Japan, South America, and the Near and Far East).

Outbreak of Small-pox in a Private Hospital.

A recent outbreak of small-pox in one of our best private hospitals caused a great stir, because a dozen persons were infected from a baby. This fact illustrates what a rarity small-pox is with us, especially since the war. Practically the entire population has been vaccinated or revaccinated within the last seven years, and it is also significant that the majority of the infected patients were babies who had not yet been vaccinated, being practically newborn or only a few days old, and staying in the institute until their mothers could leave it. All cases recovered without serious complications, and the outbreak was soon controlled.

Bread Conditions in Vienna.

Medical men have recently observed a series of more or less severe irritations of the gastro-intestinal tract owing to the ingestion of our unsatisfactory bread. The mixture of flour used for public bread consists of rye-flour, barley-flour, and maize, sometimes with potatoes added to it. Wheat-flour has nearly completely disappeared from the bread at present. The maize used within the last couple of weeks or so must have been contaminated or otherwise unfit for human consumption, and thus have produced the above-mentioned untoward effects. As the bread-supply is controlled by Government the composition of it is nearly uniform all over the country, as far as baking for sale is concerned, and the population are suffering severely under this burden. All attempts are being made to eliminate the maize or to substitute it by a more wholesome ingredient.

Oct. 4th.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

Australasian Medical Congress.

THE Congress was opened in Brisbane on August 23rd, the presidential address being given by Dr. W. Taylor, of Brisbane, in the presence of the Governor-General of Australia, the Lieutenant-Governor of Queensland, Mr. Fihelly, Premier of the State, and a distinguished gathering. Some 200 delegates attended the various sections, which included a combined discussion by medical and surgical members on gastric ulcer. A special sub-committee reported that in its opinion there was no climatic or other reason why the Northern Territory of Queensland should not support a healthy white population, and presented recommendations on special points of hygiene and on preventive measures against hookworm and malaria. The final resolutions adopted by the Congress dealt with the following matters:—

It was resolved that the Australasian Medical Congress cease to exist as such, and that its affairs be wound up by the present executive. The Federal Committee of the British Medical Association in Australia being prepared to carry on the British Medical Association Medical Congress in the event of the Australasian Medical Congress ceasing to exist, the next Congress will be limited to members of the British Medical Association. A resolution was adopted from the Section of Naval and Military Medicine and Surgery, expressing the opinion that the real principles underlying military public health administration could be readily adapted for use in civil life. These principles implied

control by a central Commonwealth authority, the grant of maximum autonomy to local health authorities, the organisation of the medical profession to give each member a part in public health affairs, the advancement of research, and education. This section also recommended a complete investigation and determination of the physical standards necessary for recruits in the Australian army. A recommendation was adopted from the Section of Dermatology, suggesting the appointment of a committee to report on the occurrence of skin cancer in Australia; from the Section of Ophthalmology, objecting to the registration of opticians for sight-testing; and from the Section of Public Health, urging the eradication of mosquitoes, together with the establishment of chairs of preventive medicine in the medical school of each Australian university, of diagnosis laboratories in the principal centres of extra-metropolitan population throughout the Commonwealth, and of a full Section of School Hygiene at the next Congress. A resolution from the Section of Surgery, favouring an effort to secure uniformity in surgical degrees granted by the universities of Australia, was adopted; it was decided to approach the Senate of the University of Sydney with a request that the question be considered. A further recommendation was accepted favouring the formation of a section of surgery in each branch of the British Medical Association in Australia and New Zealand. From the Section of Obstetrics resolutions were adopted urging action to deal with the menace of gonorrhœa, protection of the women of Australia, adoption of up-to-date methods of prophylaxis against venereal disease, and prevention of misapplication of the maternity bonus. From the Section of Diseases of Children resolutions were adopted dealing with the absence of regulations to enforce certain elementary methods of preventing disease, with complete schemes for medical inspection of school children and the appointment of full-time medical officers to carry out the major portion of the work. Other resolutions adopted were:- from the Otological Section, that the universities be invited to consider the grant of a diploma in recognised special subjects; from the Section of Neurology, that the universities be asked to provide instruction in psychology for medical students, that research be instituted into the treatment of psychoneurosis and allied conditions, and that special hospitals be established in all the capital cities of Australia for the treatment of early and border-line stages of mental disorders.

Prohibition in Queensland.

A special meeting of the Queensland branch of the British Medical Association has adopted a resolution approving of prohibition as opposed to State control of liquor. A referendum is to be taken in Queensland, and prohibition, if carried, will not become effective until 1925.

Anderson Stuart Memorial.

A movement is on foot in the University of Sydney for the establishment of a memorial to the late Professor Sir T. Anderson Stuart, to take the form of a travelling scholarship, the holder of which shall on his return to Sydney spend some period within the University.

Action against a Practitioner.

An action for damages for alleged unskilful treatment has recently been concluded in Melbourne. Dr. W. G. Cuscaden, a well-known suburban practitioner, performed a minor operation on a boy at his surgery; the wound subsequently became infected, and it was alleged on behalf of the plaintiff that the doctor had upon one occasion used an ordinary pair of household scissors without sterilisation. After a very protracted hearing the jury found for the plaintiff, although all his allegations were denied or controverted. The members of the medical profession in Melbourne propose to entertain Dr. Cuscaden at dinner as a mark of their confidence in him.

State Hospitals in New South Wales.

The Government hospitals and asylums in Sydney, which deal with large numbers of cases, appear to be of the type known elsewhere as benevolent asylums or infirmaries. At Rookwood there are 628 hospital and 743 asylum beds, usually full, only males being admitted. At Liverpool there is accommodation for 549 males. The Newington hospital for women holds 750. The mortality at the two male hospitals is 21 per cent. and 11 per cent. respectively, whilst the women's mortality-rate is nearly 20 per cent. The numbers seem high, but most of the cases have no doubt been rejected by the general hospitals.

Venereal Disease.

The Melbourne Hospital has received a sum of £15,000 for the establishment of a clinic for venereal diseases; of this sum £10,000 is from the Edward Wilson estate, a charitable trust fund, and the remainder a special bequest from the estate of Mr. J. Brenan. When approached by the hospital some time ago with reference to a clinic the Victorian Government preferred to create the latter, and set it under the control of the Board of Public Health, this course being less expensive.

Small-pox in New Zealand.

Cases of small-pox have been more numerous since the crowding consequent upon the visit of the Prince of Wales. The type is mild, and the outbreak well in hand. No cases have hitherto been met with in Australia, where measles and chicken-pox are, however, very prevalent.

Sept. 10th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Public Health and Popular Opinion.

THE moral and material progress and condition of India during the year 1919 are the subjects of a statement recently issued as a Parliamentary Blue-book. In the course of this statement attention is drawn to the great need of concerted effort on the part of Government and people towards the improvement of sanitary conditions throughout the country. That the effect of good work already done in this direction is almost imperceptible is ascribed to the immense size and extreme poverty of the population; until the coöperation of the community is secured it will remain impossible to protect the country from disastrous epidemics. The difficulty of the task of spreading a knowledge of elementary principles of public health is scarcely to be estimated by those without first-hand knowledge of the facts. The mass of the populace, ignorant of the value of advice or the meaning of orders, will not support the work of a preventive medical service, and will actively or passively resist compulsion; hence the advance of research into tropical diseases has hitherto failed to result in visible benefit. The health organisation of India is plainly in need of expansion and reform, although the Blue-book deprecates the criticisms, based upon the terrible death-roll from influenza, which have been directed against the present system. It is admitted, however, that unless public opinion can be aroused little solid achievement will be possible in the near future. The Government has, indeed, redoubled its activities during the year under review. A grant of £33,000 was assigned to the improvement of public health. As a result of a conference of medical experts it was decided to establish a Central Public Health Board, consisting of official and non-official members, with a view to coördination of preventive and curative medical work and of research. The establishment of similar boards in the provinces is under consideration, and also the formation of a mobile corps of epidemiological workers, to be placed ordinarily at the disposal of local governments, but liable to be concentrated in any affected area at the order of the Government of India.

Red Cross and Women's Work.

The newly founded Indian Red Cross Society[1] will cater for the needs of both military and civil hospitals throughout the country, working through the provincial branches which are to be established. Equally important is the medical work of the Association for the Provision of Medical Aid to the Women of India, which is financed by funds opened by Lady Dufferin and subsidised by the Government of India. The funds are, however, inadequate to admit of coping with the enormous needs of the purdah women, and it is being

[1] See THE LANCET, Sept. 4th, 1920, p. 520.

found difficult so to improve conditions of pay and leave as to attract to the service the best type of European medical women, who are essential for its administration. They are needed not only to organise and superintend the larger hospitals, but to staff the women's medical colleges now existing in the United Provinces, in the Punjab, in Bombay, Madras, and Bengal, to mention only those parts of the country where work has been most promising; Lady Dufferin's fund is also being administered for the improvement of conditions of childbirth. One of the greatest obstacles to the improvement of sanitary conditions is the difficulty of enlisting the support of Indian women. The Government is now supporting the valuable work of various voluntary agencies, as, for instance, the Social Service League in the United Provinces. In Bombay the value of such agencies has led to the formulation by the Health Department of a scheme whereby the city is divided into units, each unit having its own staff of doctors, nurses, and voluntary workers.

Health in Assam.

The recently-issued report of the Commissioner of Assam is of great interest. Last August Shillong was visited by an epidemic of typhoid traced to impure milk. It was spread unnecessarily by servants of the Europeans going to and from the infected bazaars without control and so carrying the disease to their employers. According to the Sanitary Commissioner the death-rate was lamentably high last year chiefly owing to an epidemic of influenza. The imported tea-garden coolies proved a great difficulty. The 239,885 emigrants came chiefly from the famine-stricken districts of Bihar and Orissa, and their condition predisposed them to attacks of epidemic disease. A single inoculation against cholera was enforced at the recruiting stations prior to the despatch of the emigrants.

Allahabad Medical Association.

The following resolutions were unanimously passed at a recent meeting:—

1. That this Association protests at the distinctions shown in the matter of pay in the Indian Medical Service. The unpopularity of the measure is proved by the fact that of 900 temporary Indian Medical Service officers only 100 or 150 have applied for permanency.
2. That the Association recommends the Lieutenant-Governor to allot two chairs in King George's Medical College, Lucknow—namely, one for ophthalmology and the other for materia medica and forensic medicine—to the deserving applicants amongst the civil assistant surgeons and the private practitioners.

The Retirement of Jullundur Smith.

Lieutenant-Colonel Henry Smith, C.I.E., I.M.S., has left India on furlough pending retirement. Men may come and men may go, but men of Colonel Smith's calibre do not come and go every day. It is unnecessary to comment on his world-wide fame as an ophthalmic surgeon. He has had pupils and visitors from all over the world at his clinics at Jullundur and Amritsar. His great skill as a surgeon brought him into close touch with the people of India. His character and type impressed them to such an extent that they conferred on him the prenomen of "Jullundur" Smith to distinguish him from all others. By this name he is known in almost every village in India, and there is no white man who knows the people of the Punjab so well. He loved and respected the people of India and was loved and respected by them.

BRITISH HOSPITAL FOR MOTHERS AND BABIES.—The foundation-stone of the British Hospital for Mothers and Babies, Woolwich (National Training School for District Midwives), will be laid by H.R.H. Princess Christian to-day, Saturday, Oct. 16th, at 3 P.M. The object with which the institution was founded in 1905 was to improve and lengthen the training of midwives, and it received from its inception the warm support and encouragement, amongst others, of the late Dr. C. J. Cullingworth. The work of the hospital has hitherto been carried out on a very small scale owing to lack of funds, and it is now refusing from 20 to 30 mothers every week. A three-acre freehold site has been purchased at Woolwich, and the committee has in hand sufficient money to provide one-third of the entire buildings. Donations are earnestly requested to avoid the necessity of closing down the work before completion, and may be sent to the Lady Balfour of Burleigh, 47, Cadogan-square, S.W.1; or Miss Alice Gregory, honorary secretary, British Hospital for Mothers and Babies, Woolwich.

THE LONDON MEDICAL EXHIBITION:
A REVIEW OF THE EXHIBITS.

THIS annual event, though its sequence was broken in the war period, serves a useful purpose, judging from the professional interest taken in the proceedings last week. The organising authorities did well to secure the ample accommodation provided at the Central Hall, Westminster, for the applications for space exceeded previous records, and the exhibition was spread over two floors. As it proved there were many interesting things gathered together in the spacious building which attracted the attention of the medical visitors, and following we give a review of the more important exhibits, which may conveniently be divided into four sections: (1) Medical and Surgical Appliances; (2) Drugs; (3) Special Foods; and (4) Publications.

I. MEDICAL AND SURGICAL APPLIANCES.

Electrical apparatus was a decided feature of this section. There was, for example, a very interesting collection of radiographs illustrating vividly the rapid advances made in this field of diagnosis. The stall of Kodak, Ltd., Kingsway, London, proved an attractive study, at which radiographs on Eastman "duplitised" X ray films were the central figure. The exhibits included a set of negatives showing the increased amount of image obtainable by the use of intensifying screens. Negatives were shown, taken by single flash exposure. The clearness of detail, despite the high speed exposure, is remarkable. Messrs. Watson and Sons, Ltd., of Sunic House, 43, Parker-street, Kingsway, London, presented a portable X ray equipment which, on inspection, seems of value to the general practitioner and the dental surgeon. This can be operated from a lamp socket, and consists of a transformer with one switch, the Coolidge tube being used as the source of the radiations. The exhibit included well-designed appliances for faradisation, galvanisation, and iontophoresis. An ingenious device, as an aid in the exploration of the throat and ear channels, drew considerable attention at the stall of the "Aurorascope" Company, Ltd., of Fulwood House, Fulwood-place, Holborn, London. The illumination of the passages by this lamp has evoked considerable appreciation from operators. X-Rays, Ltd., of 11, Torrington-place, Gower-street, London, demonstrated the advantages of their latest design of high-tension transformers for X ray work, and the apparatus shown gave evidence of this firm's intention to pursue this branch of science on advanced lines. We understand that this company has recently acquired the electro-medical undertakings of the High Tension Company, and has appointed a well-known authority on high-tension apparatus, who was engaged on this important work during the war. His services in the direction of research work have been secured, and will be devoted to the development of X ray applications in medical practice, and this includes dental surgery, in which direction X ray work is rapidly assuming importance. Messrs. Schall and Son, of 71 and 75, New Cavendish-street, London, made a point of their "pentostat," which should prove an asset to the medical practitioner, since by its means he is enabled to utilise from the main supply with the greatest convenience electric power for any purpose—illumination, mechanics, cauterising, and so forth. Advances in the technique of X ray work were well in evidence at the exhibit of the "Solus" Electrical Company, of 100, Judd-street, London, whose claim for clearness of image was substantiated by the photographs exhibited.

Further exhibits in this division worthy of notice were the well-designed surgical appliances of Messrs. Walton and Curtis, of 8, Old Cavendish-street, London. Their attention appears to have been successfully turned to the construction of an abdominal support, a colotomy belt, and a compensating pressure-pad. Similar appliances were shown by Messrs. Mayer and Phelps, of Chiron House, 59–61, New Cavendish-street, London, including the Walton abdominal support. There was also exhibited at this stall Marr's sensitive ear-cone, an

instrument designed in simple fashion for the partially deaf, the import of which appealed to the medical visitors. It is described as a sound-wave concentrator; its adaptation is convenient and it can be carried about with much the same ease as pince-nez. The exhibit included an examination lamp for use in laryngological, ophthalmological, gynæcological, and dental practice.

A new departure on the part of hospital policy was illustrated amongst the exhibits of Messrs. Allen and Hanburys, Ltd., of 48, Wigmore-street, London. The authorities at the London Hospital, realising the difficulty in obtaining trustworthy catgut, have decided not only to prepare this material for themselves, but have installed a plant the output of which will meet the needs of other hospitals. It is pointed out that it is as easy to make for 20 hospitals as for one, and the proposal is to supply these other institutions with a satisfactory material. This may be regarded as a scientific business, and any profits accruing go to the general funds of the hospital. There was an interesting collection of apparatus, designed chiefly for bacteriological work, at the stall of Messrs. Chas. Hearson and Co., Ltd., of 235, Regent-street, London. Their incubators, providing exact and automatic regulation of temperature, are well known. In addition to general surgery accessories of approved design the Surgical Manufacturing Co., Ltd., of 83 and 85, Mortimer-street, London, exhibited a "Congress" cabinet which offers obvious conveniences to the surgeon. The cabinet is replete with caddies storing all the dressings requisite on the operating table. An impressive show was made by P. K. Arm, Ltd., of 8, Southampton-row, London, who presented for inspection designs of mechanical hands and arms which will be of great practical aid to those who are unfortunate enough to have lost a limb. Lastly should be mentioned the blood-pressure outfits and the basal metabolism apparatus exhibited by the Sanborn Company, of 11, Victoria-street, London. These appliances are constructed on well-approved principles, and have already been referred to in our columns (THE LANCET, July 17th, 1920).

(To be continued.)

URBAN VITAL STATISTICS.

(Week ended Oct. 9th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 10·2, 10·7, and 11·0 in the three preceding weeks, fell last week to 10·9 per 1000. In London, with a population of nearly 4½ million persons, the annual death-rate was 10·5, or 0·2 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 2·9 in Smethwick, 3·5 in Wimbledon, 3·9 in Hornsey, and 4·1 in Walthamstow, to 16·7 in Merthyr Tydfil, 16·9 in Gateshead, 17·0 in Burnley, and 19·2 in Barnsley. The principal epidemic diseases caused 323 deaths, which corresponded to an annual rate of 0·9 per 1000, and comprised 226 from infantile diarrhœa, 52 from diphtheria, 15 from whooping-cough, 13 from measles, 13 from scarlet fever, and 4 from enteric fever. The deaths from diarrhœa, which had been 182, 205, and 208 in the three preceding weeks, further rose to 226, and included 50 in London, 21 in Liverpool, 17 in Sheffield, 13 in Hull, and 8 in Manchester. There were 4121 cases of scarlet fever and 1884 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 3717 and 1778 respectively at the end of the previous week. The causes of 29 of the 3720 deaths in the 96 towns were uncertified, of which 4 were registered in Birmingham and 3 in South Shields.

Scottish Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 11·3, 12·4, and 12·1 in the three preceding weeks, rose to 12·8 per 1000. The 278 deaths in Glasgow corresponded to an annual rate of 13·0 per 1000, and included 11 from infantile diarrhœa, 3 each from enteric fever and diphtheria, 2 from whooping-cough, and 1 each from small-pox and scarlet fever. The 85 deaths in Edinburgh were equal to a rate of 13·0 per 1000, and included 1 from diphtheria.

Irish Towns.—The 130 deaths in Dublin corresponded to an annual rate of 16·0, or 1·5 per 1000 below that recorded in the previous week, and included 21 from infantile diarrhœa, 4 from diphtheria, and 3 from whooping-cough. The 95 deaths in Belfast were equal to a rate of 11·7 per 1000, and included 7 from infantile diarrhœa.

The Services.

PAY AND RETIRED PAY OF THE ROYAL ARMY MEDICAL CORPS.

AN Army Order just issued (A.O. 437 of 1920) publishes the substance of a new Royal Warrant, dated Oct. 9th, 1920, substituting new rates of pay in certain grades, for those laid down in Table VI. attached to the Royal Warrant of Sept. 13th, 1919. These new rates of pay which have effect from April 1st, 1920, were included in the tables published in the Students' Number of THE LANCET, dated August 28th, 1920, p. 468. The only further change concerns the increase of pay of a captain, after 5 years, from £1 7*s.* to £1 7*s.* 6*d.* An Army Council Instruction on the new Warrant states that this now disappears, but that "an officer who has qualified prior to the date of this Warrant to the £1 7*s.* 6*d.* rate of pay may continue to draw that rate." Steps will be taken to reassess retired pay in accordance with the terms of the new Warrant, and individual applications will be unnecessary, but in the event of considerable delay application should be addressed to the Secretary (F. 3), War Office, S.W.1.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Cmdr. A. A. Sanders to be Surgeon-Commander.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. F. W. Hardy relinquishes the temporary rank of Colonel.

Major V. C. Honeybourne retires receiving a gratuity.

The undermentioned temporary Captains relinquish the acting rank of Major: E. Scott, P. N. Vellacott, F. B. Winfield, J. H. Thornley.

To be temporary Captains: H. H. Crickitt, H, L. C. Noel, R. Hodson, F. Dallimore.

R. M. Walker to be temporary Lieutenant.

Officers relinquishing their commissions:—Temp. Capt. R. M. Clarke. Temporary Captains granted the rank of Major: W. E. Graves, H. M. Vickers. Temporary Captains retaining the rank of Captain: G. A. Mavor, A. E. Wood, D. Manson, T. A. O'Brien, C. I. Stockley, J. A. C. Smith, J. W. Harvey, D. P. Thomas, R. L. Wilcox, T. B. Dakin, H. E. Alexander, E. G. Sworder, A. J. Adkins, A. R. Rendle.

Temp. Lieut. W. E. Shipsey retains the rank of Lieutenant.

TERRITORIAL FORCE.

Capt. C. W. Ponder to be Lieutenant-Colonel and to command 1st Home Counties Field Ambulance.

Major O. H. Mavor (late R.A.M.C., Special Reserve) to be Captain and to relinquish the rank of Major.

Capt. F. K. Smith to be Major.

Capt. T. C. Clare, from 5th Northern General Hospital, to be Captain.

Lieut. J. F. O'Grady (late Lieutenant, 7th Bn., Lancs. Fus.) to be Lieutenant.

1st Eastern General Hospital: Capt. H. A. Cookson resigns his commission and is granted the rank of Major.

Lieut.-Col. E. J. Cross resigns his commission and retains the rank of Lieutenant-Colonel, with permission to wear the prescribed uniform.

Capt. W. H. Manson resigns his commission and is granted the rank of Major.

Capts. W. S. B. Bensted-Smith, R. McAdoo, G. McConnell, J. W. McKeggie, D. M. Grant, and S. S. Meighan resign their commissions and retain the rank of Captain.

Supernumerary for Service with the Officers Training Corps.—Temp. Col. Sir W. Taylor, from Army Medical Service, to be Major and to command Royal College of Surgeons in Ireland Contingent (Medical Unit), Senior Division, Officers Training Corps.

Lieut. W. L. H. Duckworth resigns his commission and is granted the rank of Captain.

ROYAL AIR FORCE.

The undermentioned are granted permanent commissions in the ranks stated: Wing Commander D. Munro; Squadron Leader W. Tyrrell.

Capt. E. T. McElligott is transferred to the unemployed list.

Dr. F. J. Waldo, City Coroner, and President of the London Coroners' Association, has been elected Master of the Plumbers' Company.

SHELTER FOR HOMELESS EX-SERVICE MEN IN LIVERPOOL.—Through the agency of Mr. H. Lee J. Jones, founder and honorary director of the League of Welldoers, Liverpool, established in 1893, the League's shelter, which, during the war housed and cared for Belgian refugees, has been reopened for the benefit of homeless ex-Service men. Each "approved" man for the shelter is given food and drink, a bath, and a clean and comfortable bed. Each night an expert on pension papers is in attendance to guide the perplexed and help them. The police and others in a special position to judge worthy men have "recommendation" tickets to the shelter, the value of which is proved by the spontaneous generosity of men who have passed through it and then found work.

Correspondence.

"Audi alteram partem."

NON-FATAL RUPTURE OF ANEURYSM OF THE DESCENDING AORTA.

To the Editor of THE LANCET.

SIR,—In your issue of Oct. 9th an interesting case of aortic aneurysm is recorded by Dr. S. R. Tattersall, in which the patient lived for about four months after a profuse hæmoptysis, evidently due to leakage of the aneurysm into the lung. As regards duration of life after a large aortic hæmorrhage this case resembles the well-known case of Liston, the great surgeon, who lived for five months after a profuse hæmoptysis from an aortic aneurysm. As a rule, hæmoptysis in these cases is followed either immediately, or within a few hours or days, by a fatal gush.

In a woman, however, who was under my care at the Sheffield Royal Hospital in December, 1911, with a palpable aneurysm of the transverse arch, slight hæmoptysis had begun two or three months earlier and lasted off and on for a few weeks. She remained under observation as an out-patient, and had no further hæmoptysis until April, 1913; it then continued in slight amounts almost daily, until on May 7th she brought up about a pint, She was readmitted to hospital, and for the next month slight daily hæmoptysis continued. She died suddenly from a fatal gush on June 6th, 1913. Autopsy showed the aneurysm ruptured into a bronchiole, and no other cause for the bleeding. In this case there had been oozing for over one and a half years.

It may be said that in such a case the early hæmoptysis did not come from the aneurysm itself, but from some small vessel in the lung, and was really a hæmoptysis of high blood pressure, sometimes described as "gouty hæmoptysis." That is quite possible where the bleeding is only slight, but the following case, which I saw in consultation with Dr. T. Robertson in July, 1916, cannot be explained in such a way, and shows that even a leak of considerable extent may be closed up, and that, not once only, but several times.

The patient was a man, aged 46, formerly a sailor. His thoracic symptoms began two and a half years before I saw him. He gave a positive Wassermann. X rays showed a pulsating shadow in the third part of the aortic arch. He had been treated by salvarsan, rest in bed, and iodides. He improved and was able to go about until August, 1915, when the first hæmoptysis occurred, described as a "bowlful of blood." From then onwards at intervals of a few weeks he had recurrences, varying in quantities from half a pint to very large, almost fatal, hæmorrhage. After these he was extremely collapsed and bloodless for long periods. I saw him after one of these; he was blanched, with a small frequent pulse and in great terror of a recurrence. He died eventually a few months later as the result of a hæmorrhage.

In this case there can be no doubt that the aneurysm itself had been leaking into the lung at intervals for well over a year. Such a case must be almost unique. Aneurysmal leaks of even greater duration have been recorded. Gairdner[1] records such a case in a man, aged 40, who had an almost fatal gush nearly five years before his death from hæmoptysis. During the intervening years the physical signs of aneurysm were quite definite, but the hæmoptysis was never more than streaky. In this case there was, as in that of Liston and in Tattersall's, one large non-fatal hæmorrhage—and one only. In Dr. Robertson's case which I have recorded above the extraordinary feature is the repeated recurrence of large non-fatal hæmorrhage.

I am, Sir, yours faithfully,

Sheffield, Oct. 10th, 1920. ARTHUR J. HALL.

THE SITE FOR INTRAMUSCULAR INJECTIONS.

To the Editor of THE LANCET.

SIR,—The method of medication by intramuscular injection is now so common that the best site is a matter of importance. The gluteal region appears to enjoy a traditional reputation for this purpose, but surely with less justification than as the time-honoured seat for castigation! The area is very vascular, is abundantly bestowed with important nerves, and is subject to the constant physiological traumatism involved in sitting and lying, to say nothing of the activity associated with walking. The deltoid region, which is its next competitor in popularity, has similar disadvantages. Doubtless with a proper selection of the exact situation and depth of the puncture, and a little care, accidents ought not to occur; but in addition to the disadvantages mentioned, neither areas are foolproof. Discomfort and soreness with sometimes sepsis cannot always be avoided into whatever muscles injections are made; but deep in the buttock the consequences may be very serious, and I know of a case in which death resulted from sloughing. Further, there is the risk of injury to nerves, and to my knowledge both great sciatics have received an injection of quinine with unfortunate result.

I would like to suggest that the region of the outer side of the thigh, where lies the great vastus externus muscle, is as nearly as possible the ideal place for all types of intramuscular injection. Here we have a large mass of muscle protected by the strong fascia lata and embedded in so much cellular tissue as to allow ample room for distension. The area does not contain any important nerves or large blood-vessels, and it can be as readily freed from physiological traumatism as any other part. The needle should be introduced about the middle of the outer side of the thigh viewed both from back to front and above down. If the bone is reached the needle is to be slightly withdrawn before the injection is made.

I have repeatedly used this route for all sorts of injections, including saline up to a pint (quite apart from the wisdom or otherwise of exhibiting normal saline in this way), quinine hydrochloride in varying doses, the several varieties of sera and cuprase. I have never seen any evil consequences, and certainly much less of inconvenience than in the other and more usual sites, and it has the further advantage that it can be used repeatedly, the situation of the puncture simply being varied a little each time.

I believe that if these considerations were taken into account this route would become the recognised one, and with good reason. I should have hesitated to bring this matter before your readers had it not been that the old favourites are still recommended in recent papers, and that conversation with my friends has led me to believe that the vastus externus is commonly neglected for this purpose.—I am, Sir, yours faithfully,

G. GREY TURNER.

Newcastle-upon-Tyne, Oct. 11th, 1920.

LIGATURE OF THE INNOMINATE.

To the Editor of THE LANCET.

SIR,—The death of Lieutenant-Colonel John Lewtas (late I.M.S. Bengal), recorded in your issue of Oct. 9th, calls to mind the interesting fact that he was one of the first surgeons to ligature successfully the innominate artery. Two such cases preceded. One the well-known case of Smyth, of New Orleans, in 1864, where secondary hæmorrhage was stopped by pouring small shot into the wound; the other that of W. M. Banks, of Liverpool, in 1883, where pulsation recurred and death from pneumonia followed a secondary operation 67 days later. Lewtas's was the third successful case, and is recorded in the *British Medical Journal*, 1889, vol. ii., p. 312.

The patient, a soldier, aged 20 years, was in the Murdan Hospital, Punjab, India. A month before operation his gun burst and he thought that a piece of the breech lodged above the right collar-bone. There was bleeding from the wound for three days before admission. There was a hard non-pulsating swelling above the clavicle with brownish blood oozing from a partly healed wound in its centre. Operation on May 13th, 1889. This wound was enlarged and a fragment of steel removed. Profuse hæmorrhage followed which was stopped by pressure. An incision was made along the inner edge of the sterno-mastoid and the innominate and carotid tied with catgut. The patient recovered.

I am, Sir, yours faithfully,

Wimpole-street, W., Oct. 11th, 1920. A. W. SHEEN.

[1] Clinical Medicine, Edinburgh, 1862, p. 513.

"SNAPPING OF THE BRAIN."

To the Editor of THE LANCET.

SIR,—I am at present attending a patient who complains of the symptoms noted by Sir Robert Armstrong-Jones in his letter in THE LANCET of Oct. 2nd. She is a well-educated Irishwoman in domestic service in the same family for many years. She says:—

"About 18 months ago something gave way in my head with a snapping noise. I was out walking. I was confused for half a minute. Since then I have had pains in different parts of my head—at the back, across the forehead, or in my temples, and I have been unable to sleep. Also for about six months I occasionally missed words when writing. Otherwise I am well."

I reminded her that she was a rheumatic gouty person, that her joints crack, that once one of the joints connecting the skull with the top of the spine cracked, and told her that it was not important. I gave her a special course of treatment, and she is now sleeping better. I am, Sir, yours faithfully,

Bournemouth, Oct. 11th, 1920. GEORGE MAHOMED.

"THE RIGHT TO STRIKE" AND MEDICAL STRIKES.

To the Editor of THE LANCET.

SIR,—Under the title "Refusal to Serve" in THE LANCET of Oct. 9th a very important problem is raised. The play, *The Right to Strike*, will certainly interest the public in regard to medical politics and "help the medical profession to clarify its own views by seeing them in the limelight." But this end would, it seems to me, be better attained if there had been more said concerning what has really occurred than by a fiction that only indicates what might possibly happen if the circumstances described actually took place. Then there followed a number of press criticisms treating the idea of a doctors' strike as something quite new—as something that might even lead up to Bolshevism. As a matter of fact, a large number of medical strikes took place and were fully described in THE LANCET towards the end of last century. They continued, not only in England, but on the continent, till the ordinary trend of events was rudely interrupted by the war. As a rule, these strikes were preceded by the formation, under a great variety of names, of societies which to all effects and purposes were more or less medical trade-unions. In France they are called professional unions, because all skilled work is called a profession, and the word trade is only applied to persons who buy and sell goods. Thus medical practitioners, economically speaking, are skilled artisans, and some of the French medical professional unions or syndicates have joined the General Confederation of Labour. Yet neither in France, nor Belgium, nor Germany, and certainly nowhere in Great Britain, has a medical strike taken place against the general public.

As the play, *The Right to Strike*, will give rise to much discussion concerning the possibility of a doctors' strike, it should be clearly stated, or rather repeated, for the statement has been made over and over again, why doctors have struck, and what happens during such a strike if life is endangered for want of medical attendance. First and foremost, all the strikes that have taken place—and they are numerous and widespread—were directed against what is known by the generic term as the contract system. In England this was very widely called the Battle of the Clubs. The word clubs here means benefit societies, insurance companies, Christmas goose clubs, funeral clubs, and is used even for the selling of mangles or the grouping of regular customers for the consumption of beer in some particular public-house. At Grimsby, at Walsall, and other places I found that doctors were utilised as decoy ducks to ensure customers, even women customers, for publicans. (See THE LANCET of April 25th, 1896.) The rule of one club, to which 90 women belonged, was that they should meet every fortnight and pay sixpence, which included a penny per week for medical attendance, three-halfpence for ale, and the balance for funeral expenses. It was against such degrading conditions as this that medical unions were formed and strikes organised. But though this is a sensational and shocking aspect of the grievances the strike weapon sought to remove, more widespread, more serious financially is the fact that wealthy tradesmen and others in receipt of good incomes availed themselves of clubs and benefit societies to obtain medical assistance for a penny or even less than a penny per week. Thus, for instance, the mayor of a cathedral town paid 3*s*. 6*d*. per annum for medical aid; and it was calculated that during one year when his subscriptions came to about 11*s*. for himself and family, his medical bill, at 2*s*. 6*d*. a visit, would have amounted to £35. As, however, he was well able to pay 5*s*. a visit, it is £70 and not 11*s*. the medical profession of that historical cathedral city should have received. Against such abuses medical men in most countries of Europe have organised medical unions and medical strikes.

It was in the "forties" of last century, when great distress prevailed, that with the approval and assistance of the medical profession, benefit clubs or friendly societies were started on a large scale. On the continent this is known as the Mutualist movement. By paying something like a penny a week the poor would ensure against sickness, but it was never intended that the well-to-do should avail themselves of these semi-charitable benevolent institutions. The medical officers of such organisations were perfectly justified in striking when they found that they were expected to attend patients well able to afford the ordinary fees. The case was that of a bargain in which one side defaulted and the other said that the bargain was, therefore, no longer binding. To-day, however, the question is raised, by the play now performed, whether such a medical strike would take place and would be justified if it occurred on a more general, indeed, on a semi-political, issue. Then, if such a strike took place, could or should it be carried to the extreme length of sacrificing human life for want of medical attendance?

In answer to this latter question it can be said that, whatever the future may hold forth, this has never happened in the past. Scores, probably hundreds, of medical strikes have taken place, but when it was really a matter of life or death medical advice has never been refused. Indeed, medical advice is not usually refused even for trivial cases if the sufferer presents himself as an ordinary patient ready to pay the ordinary fee. It is as a club patient and under the contract system that attendance is refused. The strikes are not against the public, but against the contract patients or the insured patients; sometimes, as in Cologne, against the patients imbrigaded under a compulsory Insurance Act. At Cologne in 1904 some 35 doctors, then again in 1909 80 doctors, went on strike against the Insurance Law, claiming that no practitioner should have more than 2000 insured persons on his list and that all insured persons should have the free choice of their medical attendant. Incidentally it may be mentioned that the German medical trade-union, known as the Leipziger Verband, was founded in the year 1900 by about 500 doctors, and that by the autumn of 1913 it had 25,120 members paying £1 each per annum. The question of medical trade-unions is not, therefore, merely a dramatist's fiction; in Belgium, for instance, the movement is strong in membership and advanced in its politico-social aspirations.

The organisation of the medical profession for the defence of their code of honour and their economic interests may well supply material for works of fiction which owe their principal merit to the fact that they illustrate some of the real problems of the day. But though I have followed very closely and in several countries the organisation of the profession and the strikes ensuing, I have never heard of a dramatic situation arising because a medical man on strike refused to attend a patient in danger of death. In such a case the doctor refuses to attend as an insurance or club doctor. He also refuses to be paid under the contract system, but attends to the patient either gratuitously and as a matter of humanity, or accepts, if offered, the usual medical fee. So far the public has always been able to obtain medical advice, even when a strike of doctors

has paralysed the medical aid societies. It is only necessary to secure the services of a doctor through other channels and on other conditions than that of the societies or insurance regulation against which the strike is directed.

A dramatic situation is much more likely to arise, and, indeed, to my personal knowledge has arisen in a few cases, not with regard to an ordinary patient, but where what British trade-unionists would describe as a medical "blackleg" is concerned. This was so with regard to one of the first strikes I studied. It was the Brussels strike of 1895, and it lasted a whole year. There were then about 450 medical practitioners in Brussels, and 430 of them belonged to *Le Syndicat Médical*, or medical trade-union. But there were 20 medical men employed at fixed salaries by the Mutualist Federation, which had 12,000 members, and represented a population of 50,000 persons. The strike was against the 20 doctors and their 50,000 clients. The details were fully given in THE LANCET of August 24th and 31st, 1895, and July 4th, 1896. Most of the 20 medical men in the employ of the Mutualists resigned and joined the strike. They were replaced by what were described by their opponents as the tag-rag and bobtail of the profession, but the Mutualists were saved for some time because they succeeded in engaging first one and, when he left, another thoroughly competent medical officer. Here arose the analogy that might be made with Mr. Hutchinson's play. This able medical officer himself fell so ill that one of the principal professors of the Brussels Medical School, who, of course, was helping the strike, had to be called in. THE LANCET of July 4th, 1896, concludes the story in the following words:—

"The professor tended him with care, but he did not fail to profit by the opportunity thus obtained of exercising due pressure. 'I have cured you of your physical ailment,' said the professor; 'it is now your turn to effect your own moral cure. If you want to see me again you must first do your duty to your fellow medical men by leaving the Mutualist Federation and joining our union.' The lesson went home, the medical man in question gave in his resignation, and thus the Federation has lost the second really competent medical officer they have been able to enrol since the commencement of the strike."

Hence it came about that, after a struggle lasting a year, the Brussels Medical Union won their strike.

Another story, with which I also came in personal contact while studying these questions, related to a physician who had only practised in India. Ignoring entirely the medical politics of England, but anxious to return to his own country and to give his family an entrée into English society, he accepted a post with a fixed salary as a club doctor. The dramatist might here imagine the disappointment of the somewhat pompous Indian official and his family on arriving, to find themselves ostracised by the fellow members of the profession, and generally denounced and looked down upon as a "black-leg" family. Practically, and this is no fiction, they were drummed out of the town. But there follows a much more dramatic situation. The doctor in question was compelled to accept a poor East End practice and the true Russian Bolshevist element can now be introduced culminating in the Sidney-street siege. Here at the risk of his life, the hero of the play could be shown climbing over back-garden walls, and under a shower of Bolshevist bullets, dressing wounds, saving lives, so that he regains his reputation in the profession and his early "black-leg" experience is forgotten and forgiven. If this is not sufficient, and it would be equally true, then the hero of the defending party in the Sidney-street house can be followed back to Russia where he actually holds a high position in the Soviet Government. It is only necessary to entwine a love story in all this and we have the matter of a drama so far true to life that the principal events have actually taken place.

Naturally, and throughout, the ethics and the economics of medical practice are involved, and that is why I venture to think it is well to call the attention of the profession and the public to such plays as Mr. Hutchinson's *The Right to Strike*.

I am, Sir, yours faithfully,

ADOLPHE SMITH,

London, Oct. 10th, 1920. Author of "The Battle of the Clubs."[1]

[1] THE LANCET, 1895 and 1896, *passim*.

Obituary.

THE LATE DR. WILLIAM MURRAY.

THE notice in our last week's issue of that veteran clinician and teacher, Dr. William Murray, recorded briefly the main facts of his career. We are indebted to one of his old pupils, Dr. J. Gordon Black, of Harrogate, for the following details of a more personal nature:—

Dr. Murray, naturally a man of exceptional mentality, had the advantage in early life of distinguished associations. At Edinburgh he became a favourite of Sir James Y. Simpson, the gynæcologist of his day, an association which influenced his subsequent career in Newcastle-on-Tyne, for Dr. Murray himself soon became the principal exponent of gynæcology in the North of England. Sir John Fyfe, to whom he was apprenticed, was a distinguished surgeon of virile character and Mayor of Newcastle at the time of the Chartist riots. He it was who quelled a menacing rising in the "Forth Banks" by riding down the insurgents at the head of a company of Dragoons. His son, Major Fyfe, and Dr. Murray were instrumental in establishing the first children's hospital in Newcastle, and Dr. Murray incurred the displeasure of the Ladies' Committee by prescribing for some of these debilitated children pepsina porci, then a new and expensive remedy. He won the day for the physicians' freedom of action in prescribing. About this time Dr. Murray made a name for himself by being the first to cure a case of aneurysm of the abdominal aorta by the rapid method—i.e., pressure. The case before treatment was shown on April 14th, 1864, to the Northumberland and Durham Medical Society, and again, after the complete cure, to the Royal Medico-Chirurgical Society of London on May 24th. A full description of this case is given in his "Inductive Method in Medicine" published in 1891, in which appear also two entertaining chapters on "Starving into Health," and "The Dangers of Regular Habits," which stamp Murray as a ready and reflective writer. "Rough Notes on Remedies" appearing later proved an unbounded success, and its six editions met the wants of a generation of practitioners. In his article "Arsenic in Chorea" Dr. Murray describes in characteristic vein how he came to prescribe 15 to 20 drop doses of Fowler's solution to *children* for a few days without disturbing the stomach, and that how, when so given, the chorea is cured within a week! In the same book Dr. Murray has pertinent remarks to make on "Railway Cases."

Dr. Murray was a born physician and had for many years an extensive practice in Newcastle, being in constant requisition as a consultant in the counties of Northumberland and Durham. His fine intellectual and virile features were always welcomed in the sick room and the patient had absolute confidence that, if experience and science could do anything for his case, it would be effected. In consultation the more difficult the case the more he shone, and the general practitioner who called him in could always calculate on receiving valuable hints in diagnosis and treatment. In October, 1864, Dr. Murray commenced his first course of lectures on physiology at the Newcastle School of Medicine. His philosophic style and lucid language is still remembered by his old pupils. As a public lecturer, too, he was in great request. In his early days of practice he used to give religious addresses to the workmen of the celebrated Geo. Stephenson's Engineering Factory during the dinner-hour, a critical thing to attempt, yet his personality and evident sincerity pulled him through. Like all men of genius, Dr. Murray had his peculiarities, one of which was that for many years he lived in a succession of furnished houses, always handsomely appointed, and often surrounded by extensive park-like grounds. He quoted the old saw: "Fools build houses for wise men to live in," adding: "In my case the fools have to furnish them too"! He was fond of fishing and shooting, and on retiring from the more active practice of his profession he went to live near the bank of the Eden, so that he might always be in close touch with his beloved trout.

THE LATE DR. J. TUBB-THOMAS.—The death occurred recently of John Tubb-Thomas, L.R.C.P., L.R.C.S., L.M. Edin., D.P.H. Irel., at his residence in Trowbridge, Wilts. He had been in practice in Wiltshire about 40 years, having qualified in 1879, and for 21 years was medical officer of health for the county of Wilts. He performed much useful work, and was highly respected and esteemed in Trowbridge and the county.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiology and Materia Medica and Pharmacology, held on Sept. 30th and Oct. 1st, 4th, and 5th, the following candidates were successful:—

Anatomy and Physiology.—A. Ahmed, Birmingham; C. S. Anderson, St. Mary's; C. H. Atkinson, Guy's; A. E. Austin, St. Bart.'s; T. F. Barlow, London; M. K. Barnett, Birmingham; J. A. Brew, Middlesex; A. Broido, Guy's and Cape Town; F. L. Cattle, Univ. Coll.; J. E. Clegg, Manchester; D. H. Cockell and F. S. Coleman, St. Bart.'s; Florence Ellen Cowlin, King's Coll.; S. H. Daneel and J. A. F. Denyssen, Guy's; Miriam Phœbe de Villiers, Cape Town Univ.; Margaret Beatrice Marion Dewhurst, Lond. Sch. of Med.; R. S. Ellis, Birmingham; P. Ellman, Manchester; Norah Alys Macartney Empson, King's Coll.; H. Evans, Guy's; Sarah Evans, Cardiff; Margaret Findlay, Cape Town; D. S. Hammond-Williams, Guy's; C. H. Humpshire, Univ. Coll.; I. E. Harries, Guy's; W. E. Howell, St. Bart.'s; L. D. A. Hussey, King's Coll.; H. Jaffe, Manchester; A. Jephcott, Cambridge and St. Bart.'s; T. Latham and M. A. Lautré, Manchester; A. A. Lucas, Edinburgh; Marion Alice Nona Marshall, Lond. Sch. of Med.; S. F. Mina, King's Coll.; S. Mobaruk, London; E. B. Moffat, Cape Town Univ.; M. Nazuni, Univ. Coll.; M. Newfield, King's Coll.; G. E. Peacock, Calcutta and King's Coll.; H. J. Plowright, Guy's; B. A. Rao, Madras and Middlesex; F. Robinson, Manchester; O. F. W. Robinson, King's Coll.; B. C. D. S. Rupasingha, Ceylon; I. A. Senanayeke, Univ. Coll.; Beatrice Marian Smyth, Newnham Coll.; W. Stephenson, Durham; R. M. L. Still, Guy's; J. R. Thomas, London; Helen Rebecca Turover, Charing Cross; W. R. Ward, St. Bart.'s; and C. W. Warne, Guy's.

Materia Medica and Pharmacology.—N. J. Ainsworth, Middlesex; C. C. P. Anning, Cambridge; C. H. Atkinson, Guy's; J. R. Burrows, Liverpool; D. A. L. Crawshaw, Guy's; Gwladys Deborah Davies, Cardiff; V. R. de Boissiere, Guy's; C. J. C. de Silva, Middlesex; H. O. Eksteen, Guy's; A. Gullertein, London; P. G. Harvey, Guy's; S. J. Hoffman, Middlesex; M. Jackson, Guy's; J. C. C. Langford, St. Bart's. and Manchester; H. B. Mann and N. F. Meldrum, Middlesex; Rose Moss, Charing Cross; H. J. Plowright, Guy's; M. Rose, Middlesex; Mary Gwendolen Vaughan, King's Coll.; and H. J. F. Wood, Guy's.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: MUSEUM DEMONSTRATIONS.—The following demonstrations of specimens in the Museum will be given during October in the theatre of the College in Lincoln's Inn-fields, London, W.C. Professor A. Keith, F.R.S., will show specimens illustrating the Commoner Malformations of the Mouth and Neck on Oct. 15th, Congenital Malformations of the Alimentary Canal requiring Surgical Measures on Oct. 22nd, and Malformations of the Rectum, Anus, Vulva, and Vagina on Oct. 29th. Professor S. G. Shattock, F.R.S., will demonstrate on specimens of Hypertrophy on Oct. 18th, of Lipoma on Oct. 25th, and of Fibroma and Chondroma on Nov. 1st. All these demonstrations will be given at 5 P.M., and are open to advanced students and medical practitioners.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on Oct. 11th:—

Bachelor of Medicine and Bachelor of Surgery (M.B., Ch.B.).—Alan Percy Agnew (with honours), Alexander Gardner Aitken, Margaret Bennett, Donald Eadie Brown, William Armour Galbraith, Dorothy Jean London Gallie, John Gray Gilmour, Charles Glen, Agnes Scott Glover, Charles Napier Gordon, Mary Burns Grant, Margaret Gray, Hugh Wardrop Howieson, Thomas Todd Hutchison (with commendation), David Imrie, John Alexander Jenkins, Henry John Macbride, Alexander Mitchell M'Clure, William Ritchie M'Crae, Andrew Buchanan Macdonald, Edward Parlane Macfarlane, Donald MacKenzie, Jean M'Iver Mackintosh, Marie Josephine M'Naught, Alexander M'Callum Macqueen, Farquhar M'Vean, Matthew Findlay Guthrie Main, Arthur Markson, Effie Niblock, James Prentice, Mary Russell, Thomas Stewart Sargent (with commendation), Mary Shiskin, Alexandra Walker Smyllie, Francis Cyril Speechly, Donald Stewart, John Stirling, Dorothy Mary Summers, and James Dunlop Whiteford.

UNIVERSITY OF LONDON.—The Sites Committee of the Senate of the University of London has decided, subject to certain provisos, to recommend to the Senate acceptance of the Government's offer of the Bloomsbury site. The recommendation will come before the Senate at its next meeting.

The second post-graduate course in mental deficiency, arranged by the Central Association for the Care of the Mentally Defective in conjunction with the University, will be held at the University of London, Oct. 18th to 23rd, when 66 students will attend. Ten lectures will be given by Dr. A. F. Tredgold, Mr. Cyril Burt, Dr. F. C. Shrubsall, Dr. W. A. Potts, and Dr. Meredith Young, and the afternoons will be devoted to practical work. Clinical demonstrations of individual cases of defect will be given by specially chosen experts, and the students will also attend rota and admission examinations at L.C.C. special schools under the direction of Dr. Shrubsall. One day will be spent in visiting a large institution for defectives, and some smaller institutions and residential special schools will be visited in the course of the practical work. It is hoped to hold further courses in 1921.

BETHLEM HOSPITAL X RAY DEPARTMENT.—The Lord Mayor will open on Oct. 22nd the new X ray department at Bethlem Hospital, the apparatus for which is the gift of Sir Charles Wakefield.

LONDON DERMATOLOGICAL SOCIETY.—Sir William Collins will open the winter session with an address on "Man versus the Microbe," at 4.30 on Tuesday, Oct. 19th, at 49, Leicester-square, London, W.C. Members of the profession are invited to attend. Clinical cases will be shown by Dr. J. L. Bunch, Dr. W. Knowsley Sibley, Dr. M. G. Hannay, Dr. Dennis Vinrace, and Dr. W. Griffith.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE DINNER.—This dinner will take place at the Café Royal, Regent-street, London, W., at 7.15 for 7.45 P.M., on Saturday, Nov. 13th, with Mr. H. J. Banks Davis in the chair. Applications for tickets, price 15s., should be addressed to the secretary, Post-Graduate College, West London Hospital, Hammersmith, W. 6.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—The winter session will begin on Thursday, Oct. 28th, at the Prince of Wales's General Hospital, N. 15, without any formal opening address. In addition to clinics in the various departments of the hospital there will be a daily lecture-demonstration on groups of selected cases, clinical and laboratory methods, and so forth. It is intended to hold an intensive course in December, beginning on Monday, Dec. 4th, at 10.30 A.M., particulars of which will be published later. The syllabus of the general course may be obtained on application to the Dean.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—A general meeting of this society will be held at 122, Harley-street, W., at 4 P.M., on Monday, Oct. 18th. The business includes consideration of a letter inviting representation on the Tuberculosis Group of the Society of Medical Officers of Health, and of a motion that institutions for the treatment of tuberculosis be encouraged to employ ex-patients upon their staffs. A discussion on the classification of cases of pulmonary tuberculosis, and on sanatorium records is to take place. Those intending to be present are asked to bring or send beforehand 20 copies of their record papers. A discussion on a scheme of sickness insurance for ex-patients will also be held. Subscriptions for 1920 (ordinary members 10s. 6d., associate members 5s.) should be sent to the honorary secretary and treasurer, Dr. James Watt, Downs Sanatorium, Sutton, Surrey.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN.—The Chesterfield lectures are being held at this hospital, at 49, Leicester-square, London, W.C. 2, on Thursdays at 6 P.M., having begun on Oct. 7th. These lectures were founded in 1896 in connexion with a silver medal, presented by the Earl of Chesterfield to promote the study of dermatology, which is open for competition among those who have attended three-fourths of the lectures. Admission is free to medical practitioners and to medical students who desire to attend regularly. After each lecture demonstrations will be given on special cases, followed by clinical instruction up to 7 o'clock on patients presenting themselves in the out-patient department. The next lecture will be on General Principles of Treatment and will be delivered on Oct. 28th, at 6 P.M., by Dr. W. K. Sibley. Subsequent lectures will be announced in our medical diary.

LONDON SCHOOLS AND LONDON HOSPITALS.—Some months ago the London County Council gave facilities for an appeal to be made in behalf of the London School Hospitals Fund throughout the London schools. The chairman of the Council has now reported the result of that appeal. Since the appeal was issued last April the London schools have raised rather more than £22,615 for the benefit of the London hospitals, made up as follows: Allocated for particular hospitals, £10,383 4s. 11d.; not specially allocated and to be handed to King Edward's Hospital Fund for London, £10,386 5s. 1d.; sent direct to particular hospitals, £1846 8s. 9d. In securing such a result the pupils of the London schools, including those not directly connected with the Council, have surpassed all their records in former efforts, and they deserve the congratulatory words of the chairman with which the report concludes:—"Whilst the Council and those interested in the work of the London schools will greatly rejoice at the substantial financial benefit which will accrue to the London hospitals, they will derive even greater pleasure from the practical evidence of the spirit of goodwill and the sense of social service existing in the schools, which is indicated by this great charitable act."

THE annual dinner of the Society of Medical Officers of Health will be held at the Hotel Cecil, London, on Friday, Oct. 22nd, at 7.30 P.M., when the new President, Lieutenant-Colonel F. E. Fremantle, M.P., consulting medical officer of health for Hertfordshire, will take the chair. Amongst those expected to be present are Sir Clifford Allbutt, Lord Dawson of Penn, Viscount Astor, Sir Arthur Robinson, Sir George Newman, Captain Walter Elliot, M.P., Dr. A. C. Farquharson, M.P., the Presidents of the Royal Colleges of Physicians and Surgeons, and Brigadier-General W. W. O. Beveridge. The annual general meeting of the society will be held on the preceding afternoon at 4.30 P.M., at 1, Upper Montague-street, London, W.C.1. Tickets for the dinner may be obtained from the executive secretary at this address.

HOSPITAL DINNERS.—*St. George's Hospital Dinner for Past and Present Students* was held on Oct. 1st at Princes' Restaurant under the chairmanship of Sir Humphry Rolleston. The attendance amounted to nearly one hundred and the dinner was one of the most successful of recent years. The Chairman, in proposing the toast of "The Corner," dwelt on the critical time through which the school is passing. He recorded the thanks of all St. George's men to the board of governors, who, in a recent letter to the press over the signature of Lord Greville, had made it quite clear that the uncertainty as to the future site of the hospital was over, and that St. George's would remain on the site which it has occupied for nearly two hundred years. To this toast responded Dr. Norman McCaskie and the Dean of the School, the latter saying that the entry this year was distinctly better than that of a year ago, and that the school was reviving. Sir Crisp English proposed the toast of the "Alumni of St. George's Hospital," under which title he included also the alumnæ. Dr. F. Ashton Warner and Mr. I. Hamilton Beattie responded on behalf of past and present students. Finally Sir George Turner proposed the health of the dinner secretaries, Mr. Ivor Back and Mr. Claude Frankau.

Middlesex Hospital Medical School Annual Dinner was held in the Wharncliffe Rooms, Great Central Hotel, on Oct. 1st, and proved a most enjoyable one. Dr. R. A. Young presided, and in proposing the toast of "The Middlesex Hospital and Medical School," alluded to the fact that it was 31 years that day since he joined the hospital as a student, and said that not a single member at that time on the staff of the hospital now remained on its active staff. He went on to say that the policy of the school was to secure that the standard of education should be on the university level in the highest sense of the term. They had the men and the methods, and all they wanted was the money to enable their ideals to be carried into effect. The Earl of Athlone, the chairman of the hospital, responding, said that although the toast suggested the existence of two separate institutions, it would be agreed that the hospital and medical school were partners in one undertaking. When some years ago he first became associated with the hospital he shared the general impression that its sole object was the treatment of the sick. With experience came knowledge, and now with greater wisdom he did not hesitate to assert that highly important and necessary as that side of its work was, such service was secondary to the wider purpose which, in combination with its school, it sought to achieve. Treatment in the hospital brought relief to comparatively few. Research and medical education restored the health of more, and would, if encouraged, procure for the remainder immunity from disease. Indeed, there was no man or woman who did not individually owe to the hospitals a debt of gratitude, the payment of which was a duty. In financing the work of the hospitals he feared that they had been content in the past to address their appeals to the heart rather than to the head. The appeal to the heart was easily made and often met with a ready response; the appeal to the head involved explanation, instruction, sometimes even argument. He was assured that now they were doing their utmost to let the public learn what they really owed to the hospitals and schools which had worked for them so long and so silently. Admiral the Earl Beatty, who earlier in the day had distributed the prizes gained in the medical school, responded to the health of "The Guests," eloquently proposed by Sir Alfred Pearce Gould.

Westminster Hospital Old Students' Dinner was held at the Imperial Restaurant on Sept. 30th. Lord Glenconner, chairman of the hospital, presided, and 102 old students and guests were present. The Chairman proposed the toast of "The Hospital and Medical School," to which the Dean of the Medical School, Dr. A. S. Woodwark replied. Mr. A. H. Tubby, senior consulting surgeon of the hospital, proposed "The Past and Present Students"; Mr. Arthur Evans and Mr. Brown responded. The toast of "The Visitors" was proposed by Mr. Charles Ryall; Sir Malcolm Morris and Mr. S. Ingleby Oddie replied. Proceedings terminated with the toast of "The Chairman," proposed by Dr. de Havilland Hall, senior consulting physician to the hospital.

FOUR lectures on Physic will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, E.C., on Nov. 8th, 10th, 11th, and 12th, at 6 P.M. Admission is free to men and women.

Dr. J. Hutson, Government Public Health Inspector and Poor-law Inspector, has been appointed a member of the Legislative Council of the Island of Barbados.

NURSES' RESETTLEMENT DEPARTMENT. — The names of over 550 fully and partly trained nurses are on the books of this department of the Ministry of Labour, which is affiliated to the Professional Women's Register at 99, Queen's Gate, S.W.7. They are seeking well-paid and for the most part non-residential professional employment. Most of these nurses have now had a much-needed rest after their prolonged war service, and they are most anxious to undertake further work for the civil population in such appointments as surgical assistants (non-residential), dental assistants, visiting nurses, private massage cases, school and dental nurses, health inspectors, investigation officers, and probation officers. The demand for these varied types of work is not limited to London. In the provinces nurses are registering their requirements at the Professional Women's Registers scattered over the country, and in Scotland at the offices at 112, George-street, Edinburgh. Those who can offer suitable employment are invited to communicate with the Nurses' Resettlement Department at the address given above.

BRISTOL MEDICAL MEN HONOURED.—On Friday afternoon, Oct. 8th, a portrait of Mr. F. Richardson Cross, painted for subscribers to a private fund, was presented by them to the University of Bristol, in whose Council Chamber it is to hang. The value of Mr. Cross's services to the cause of university education in Bristol was recognised in speeches by the Master of the Society of Merchant Venturers and others, to which Mr. Cross replied. In the evening of the same day Dr. George Parker, who has just resigned his position as physician to the Bristol General Hospital, was entertained to dinner by his General Hospital colleagues. In speeches acknowledging their personal esteem for and indebtedness to Dr. Parker, his colleagues remarked upon the importance of the work that he is still retaining at the hospital—that of the directorship of a school of massage and physico-therapeutics.

NORFOLK AND NORWICH HOSPITAL.—The Norfolk and Norwich Hospital, like many similar institutions, is at present faced with a financial crisis. At the recent quarterly meeting of the board of governors it was stated that "the financial position of the hospital necessitates the closing of one or more wards unless sufficient increased funds are at once forthcoming." The chairman of the finance committee stated that a new maids' home was being built, a new system of central heating had been commenced, and plans were being prepared for a new orthopædic block, the estimated cost of these improvements being about £65,000. He emphasised the fact that the expenditure of the institution for 1920 would be not less than £50,000, as against £13,650 in 1913, and that the overdraft at the bank, after paying the past quarter's accounts, would be not less than £30,000. Appeals for new subscribers and increase of existing subscriptions had met with a considerable response, but the board had come to the conclusion that the only means of keeping the hospital fully open is the adoption of a system of paying by the patients. They urged, therefore, the adoption of the following proposals:—

(1) That a system of part payments by in- and out-patients be instituted on Jan. 1st, 1921.

(2) That every in-patient admitted to the hospital shall pay 1 guinea per week, unless such patient can prove to the satisfaction of a committee that he is unable to do so, or unless he has made provision for treatment through the workmen's contributory or other similar scheme, or the financial responsibility for his treatment has been accepted by another person or by some recognised authority.

(3) That recommendations be required in respect of all in-patients as heretofore, and that no wards shall be especially set aside for paying patients.

(4) That out-patients shall pay a charge of 6*d.* per attendance, but for X ray examinations and operations requiring a general anæsthetic a charge of 5*s.* and 10*s.* 6*d.* respectively shall be paid.

The workmen's contributory scheme is run by the Hospital Saturday Fund, and everyone who joins it pays at least 1*d.* a week. At present 150 factories and 46 shops in Norwich have subscribed under the scheme, but the county is only represented by one or two factories. The board pointed out that the approximate cost per patient was at present 3 guineas a week, so that the amount patients were asked to contribute would be barely sufficient to pay for their food. Good work has been done by the hospital. It appears from the report that 820 in-patients have been admitted, as against 870 last year. The number of operations performed was 514 (499 last year), and 491 new cases were treated in the out-patient department, as against 546 last year. The accidents and casualties were 1991, compared with 1619 last year.

THE annual meeting of the School Medical Service Group will be held at 1, Upper Montague-street, London, W.C., at 11 A.M. on Saturday, Oct. 23rd. New rules will be considered and passed, officers and a council elected in accordance with the new constitution of the Society of Medical Officers of Health.

VICTORIA INFIRMARY, GLASGOW.—The opening of the school for clinical teaching will take place in the boardroom at the infirmary, Langside, on Tuesday, Oct. 19th, at 4 P.M., when an address will be delivered by Sir James McKenzie, F.R.S.

MINISTRY OF PENSIONS: SUPPLY OF APPLIANCES.—Authority has now been delegated to the regional directors to deal with individual applications for the supply of surgical and artificial appliances (other than artificial limbs), spectacles, dentures, and dental treatment, which hitherto have been referred to the headquarters of the Ministry in London. Pensioners will continue to address such applications in the first instance to local War Pensions Committees, who will, when necessary, refer the case to the regional director instead of to the Ministry in London. The two principal conditions which govern the provision of these appliances or of dental treatment at the public expense are: (1) That the defect which renders the supply necessary has been accepted by the Ministry as being a disability attributable to or aggravated by military service; or (2) that the pensioner is undergoing a course of duly authorised treatment in or at an institution for his service disability, and the supply of an appliance or dental treatment is necessary for the efficacy of that treatment.

THE LATE DR. W. H. WHITEWAY-WILKINSON.—On Sept. 26th William Henry Whiteway-Wilkinson, F.R.C.S., L.R.C.P. Edin., L.S.A. Lond., died at Teignmouth, Devon. A son of the late Dr. H. B. Wilkinson, of Islington, London, the deceased was born in 1847. Dr. Whiteway-Wilkinson practised for many years in Islington, and did much useful work there during a small-pox epidemic, receiving the special thanks of the local board of guardians. Later he went to Devonshire, and was the proprietor and chairman of the commercial firm of Whiteway and Co., of Newton Abbot. He was a keen Volunteer, a freeman of the City of London, and whilst in Devonshire a guardian and a member of the rural district council of Kingsteignton. Dr. Whiteway-Wilkinson will be much missed in Teignmouth and the district, as he always identified himself with any movement for the benefit of the neighbourhood.

MATERNITY AND CHILD WELFARE AT BOURNEMOUTH.—At a recent conference convened by the education department in conjunction with the guild council of the Parkstone and Bournemouth Coöperative Society, it was unanimously resolved—

That this conference is of the opinion that a maternity committee of the Bournemouth Borough Council should be immediately established and in the composition of that committee at least two of the members shall be women.

Mrs. E. D. Hood, J.P., of Enfield (a member of the Consultative Council of the Ministry of Health), explained the powers which the 1918 Act gave to local authorities, and urged that local authorities should undertake the work instead of voluntary associations. The time had come when proper maternity homes should be provided for the benefit of women who could not have their confinements at their homes under proper conditions. A letter was read from the borough medical officer (Dr. A. D. Edwards) explaining what had hitherto been done at Bournemouth in the matter of maternity and child welfare. Special provision had been made at local hospitals for complicated maternity cases and that arrangements could be made for the supply of milk to expectant mothers and children, and for the provision of help in homes at the time of confinement.

IRISH HEALTH GRANTS.—The Chief Secretary has replied at considerable length to the representations made to him a fortnight ago by the Irish Public Health Council on the subject of the Exchequer grants for health services in Ireland. The Council, it will be remembered, asked that these grants might be held immune from interference in any political differences that have arisen or may arise between the Government and local authorities. The Chief Secretary's reply is far from clear, but it is open to the interpretation that if the local authorities submit their accounts to audit and the audit is satisfactory the grants will be paid. Unfortunately, if this, indeed, be his meaning, he has clouded it by introducing the condition "and any other obligations towards the Government have been duly met" without giving any hint of the possible nature of such obligations. In the present temper of the local authorities it is not likely that any agreement can be reached except by treating the health grants apart from other questions, and day by day the likelihood of agreement grows less. The Government's insistence on an audit as a condition of paying the grants is entirely reasonable, and on this point it cannot be expected to give way. Last week a representative medical committee consisting of the Presidents of the two Royal Colleges and of the Royal Academy of Medicine and the Governor of the Apothecaries' Hall, in consultation with the Lord Mayor of Dublin and the High Sheriff (Dr. J. C. McWattie), advised the Corporation of Dublin to submit their accounts to audit as heretofore, but apparently the corporation is unwilling even to fulfil this simple condition. In these circumstances the prospect of finding a way out of the deadlock is hopeless. It is, unfortunately, likely that many lesser authorities will follow the line set by the Dublin Corporation.

DONATIONS AND BEQUESTS.—The late Dr. Lloyd Roberts, an obituary notice of whom we published last week, left to the Royal Society of Medicine £5000; to St. Mary's Hospital, Manchester, £5000; the Manchester Royal Infirmary, £3000; the Royal College of Physicians, London, £3000; the Medical Society, London, £2000; and St. David's College, Wales, £2000, with an additional bequest of £500 to St. Mary's Hospital, Manchester, and the same amount to the Royal Infirmary, Manchester, for the purpose of establishing a Lloyd Roberts lecture. The Manchester Diocesan Finance Board receives £2000 towards the stipend of the principal minister of St. David's Welsh Church. To the John Rylands Library he left such of his bound books as the trustees of the governing body may select, and to the Corporation of Manchester, for the purposes of the Art Gallery, such of his mezzotints, watercolours, and other pictures as they may desire. In the will the wish is expressed that his china, plate, furniture, and other objects of art which are of artistic value shall, if possible, become permanent exhibits in Manchester. The residue of the estate is left to University College, Bangor, with a provision that £5000 shall be set aside for the purpose of establishing a professorial chair for any subject the authorities may think fit, to be called the Lloyd Roberts professorship.—Dr. Sinclair White, Lieutenant-Colonel, R.A.M.C., a former medical officer of health of Sheffield, and professor of surgery in the University, whose death occurred on August 8th (see THE LANCET, August 21st, p. 421), has left estate of the value of £48,537 net. After personal bequests, on the death of his wife the ultimate residue, £30,000, goes to the Royal Infirmary, Sheffield, for a home of rest for the nurses of that institution, with which Dr. White was so long connected as an active surgeon.

Appointments.

FELDMAN, W. M., M.B. Lond., has been appointed Temporary Assistant Physician to the East London Hospital for Children, Shadwell.

FULLERTON, A., M.D.R.U.I., F.R.C.S.I., Surgeon to the Belfast Hospital for Sick Children.

HACKETT, E. L. M., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Medical Officer of Health to the Pontypool Rural District Council.

HUNTER, R. N., M.R.C.S., L.R.C.P. Lond., D.P.H., Assistant Medical Officer of Health and Welfare Officer by the Deptford Borough Council.

WHALE, H. L., M.D. Camb., F.R.C.S. Eng., Visiting Consulting Oto-Laryngologist to the Ministry of Pensions Hospital, Ruskin Park.

WILLAN, R. J., F.R.C.S. Eng., Consulting Surgeon to Alnwick Infirmary.

Certifying Surgeons under the Factory and Workshop Acts: SEXTON, M. V., M.B., Ch.B. N.U.I. (Blarney); HUTTON, S. K., M.B., Ch.B. Vict. (Poole).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Hospital for Sick Children.—Hon. S., Ear, Nose, and Throat. Hon. P., Dis. of Skin.

Ashton-under-Lyne District Infirmary.—Two Asst. H.S.'s. £200.

Battersea General Hospital (Incorporated), Battersea Park, S.W.—Third Res. M.O. £200.

Bechuanaland Protectorate Government, South Africa.—Two M.O.'s. £400 and £350.

Birkenhead Borough Hospital.—Hon. Radiographer.

Birmingham General Hospital.—Two H.S.'s. £100 and £125 respectively.

Birmingham, City Infectious Hospital, Lodge-road, Hockley.—Asst. M.O. £350.

Blackburn, County Borough.—Female Asst. M.O.H. £450.

Bombay Municipal Hospitals.—Med. Supt. Rs. 1000 per month.

Buxton, Derbyshire, Devonshire Hospital.—H.P. £250.

Cardiff, King Edward VII. Hospital.—Res. Surg. O. £300.

City of London Hospital for Diseases of the Chest, Victoria Park, E. H.P. £100.

Colonial Service.—M.O.'s for West African Medical Staff, Government Service in Malaya, East African Protectorates, West Indies (including British Guiana), Fiji, and the Western Pacific, &c.

Devonport, Royal Albert Hospital.—H.S. £200.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—Cas. O. £120.

Evelina Hospital for Children, Southwark, S.E.—H.P. £160.
Greenwich and Deptford Hospital, Vanbrugh Hill, East Greenwich.—Dep. Med. Supt. £400.
Hartshill, Stoke-on-Trent, North Staffordshire Infirmary.—H.P. £200.
Hastings Education Committee.—Female Asst. School M.O. £500.
Hospital for Sick Children, Great Ormond-street, W.C.—Cas. M.O. £200. Also H.S. £50.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. 30 guineas.
Huddersfield Royal Infirmary. Two Asst. H.S.'s. £150 each.
Infants Hospital, Vincent-square, Westminster,—Female Res. M.O. £200.
Johannesburg, University College.—Sen. Lect. in Physiology. £516.
Kensington Dispensary and Children's Hospital, 49, Church-street, Kensington.—Res. M.O. £180.
Lady Chichester Hospital for Early Nervous and Borderland Cases.—H.P. £100.
Leeds Public Dispensary.—Res. M.O. £200.
Lindsey County Council.—Asst. Tuberc. O. and Asst. Sch. M.O. £550.
Liverpool, Royal Southern Hospital.—H.S. £100.
Lochgoilhead and Kilmorich, Argyll.—M.O. and Vac. £350.
London County Mental Hospital Service.—Sixth and Seventh Asst. M.O.'s. £300.
Maidstone, Kent County Mental Hospital.—Jun. Asst. M.O. £300.
Maidstone, West Kent General Hospital.—Two H.S.'s. £220.
Metropolitan Ear, Nose and Throat Hospital, Fitzroy-square, W.—Asst. S. and Clin. Assts.
Mount Vernon Hospital for Tuberculosis and Diseases of the Lungs and Chest, Northwood, Middlesex.—Asst. Res. M.O. £200.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Temp. Hon. Asst. S. and Hon. Surg. Registrar.
Northampton County Borough.—Female Asst. M.O. for Maternity and Child Welfare Work. £500.
Oldham Royal Infirmary.—Second H.S. £250.
Plymouth, South Devon and East Cornwall Hospital.—H.S. £200.
Prince of Wales's General Hospital, Tottenham.—Hon. Med. and Surg. Registrars. £100 each. Hon. Asst. P. Hon. Anæsthetist. £20. Jun. H.S. £120.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Res. M.O. £80.
Queen Mary's Hospital for the East-End, Stratford, E.—H.S.
Rochdale Union, Birch Hill Infirmary.—Res. M.O. £500.
Rochester, Kent, St. Bartholomew's Hospital.—Jun. Res. M.O. £150.
Rotherham Hospital.—Jun. H.S. £150.
Royal Chest Hospital, City-road, E.C.—H.P. £120.
Royal Free Hospital, Gray's Inn-road, W.C.—Two H.S's. £50.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Jun. Res. M.O. £100.
Salford Royal Hospital.—H.S. and Cas. H.S. £150 each.
Sheffield Royal Hospital.—Asst. Cas. O. £150.
Sheffield Royal Infirmary.—H.S. £150.
South Shields County Borough.—Asst. M.O.H. £750.
St. George's Hospital, S.W.—P. Also Asst. P.
St. Helens, Lancs., Pilkington Special Hospital.—Asst. £400.
Taunton and Somerset Hospital.—Jun. H.S. £150.
Tottenham Education Committee.—Asst. Sch. M.O. £650.
Ventnor, Isle of Wight, Royal National Hospital for Consumption and Diseases of the Chest.—Asst. Res. M.O. £300.
Warwickshire County Council.—Female Asst. County M.O.H. £500.
West Riding County Council.—Sch. Oculist. £550. Also Sch. Med. Inspector. £500.
Western Australia, Lunacy Department.—Sen. Asst. M.O, £504. Also Jun. Asst, M.O. £408.
Wigan Infirmary.—Radiologist. 200 guineas.
Winchester, Royal Hampshire County Hospital.—H.S. £250.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ivybridge, Usk, Stockport, Newtownbutler, and Inverary.

Births, Marriages, and Deaths.

BIRTHS.

BEAUMONT.—On Oct. 6th, at Tudor House, Uppingham, the wife of A. R. Beaumont, F.R.C.S., of a daughter.

BURRIDGE.—On Oct. 5th, at Mackenzie-street, Slough, the wife of John H. Burridge, M.B.E., M.R.C.S. Eng., L.R.C.P. Lond., of a son.

CUTLER.—On Oct. 6th, at 1, Dudley-road, Hastings, the wife of F. J. Cutler, M.R.C.S., of a daughter (stillborn).

IRVINE.—On Sunday, 3rd Oct., 1920, at Cloverdown, Seaford, Sussex, the wife of Captain Maurice L. C. Irvine, I.M.S., of a son.

MARRIAGES.

FARDON—JONES.—On Oct. 7th, at Rosslyn Hill Chapel, Hampstead, Albert Henry Fardon, M.D., to Fanny Dukinfield, only daughter of E. Dukinfield Jones, of "Castro," Reigate.

GEBBIE—MURDOCH.—At the Burlington House, Bath-street, Glasgow, on 28th Sept., 1920, Nicolas Gebbie, M.B., Ch.B., D.P.H., to Helen Young Murdoch, M.A., M.B., Ch.B.

MORRIS—SMITH.—On Oct. 8th, at Dorchester, quietly, Manfred Morris, M.A. (Cantab.), M.D., Captain, R.A.M.C., to Sybil, eldest daughter of G. T. Smith, Esq., of Dorchester, Dorset.

WEST—HARDY.—On Oct. 9th, at the Parish Church, Stroud, Michael Philip West, of the Indian Educational Service, to Joan Hardy, M.R.C.S., L.R.C.P., D.P.H., younger daughter of Henry L. P. Hardy, M.D., of Stroud.

DEATHS.

SIEGER.—On Oct. 6th, at a nursing home, Glasgow, William H. Sieger, M.B., Ch.B. (Glas.), D.T.M. (London), of West African Medical Service, aged 39.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Oct. 19th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Installation of New President. Sir John Bland-Sutton, F.R.C.S., President of the Society, will be installed at 5 P.M. It is hoped there will be a good attendance of Fellows.
Ballot for Election to the Fellowship.

MEETINGS OF SECTIONS.

Tuesday, Oct. 19th.

THERAPEUTICS AND PHARMACOLOGY (Hon. Secretaries—Philip Hamill, Douglas Cow): at 4.30 P.M.
Papers:
Mr. A. Bernhard Smith: Mandragora Legends.
Dr. A. S. Herbert: Significance of Jaw-neck Syndrome in Treatment of Rheumatic Diseases.

PATHOLOGY (Hon. Secretaries—Cecil Price-Jones, E. H. Kettle): at 8.30 P.M.
Presidential Address:
Professor W. S. Lazarus-Barlow: Some Pathological Effects of Exposure to the Gamma Rays of Five Grammes of Radium Bromide.
Members of the SECTION OF ELECTRO-THERAPEUTICS are specially invited to attend.

Wednesday, Oct. 20th.

HISTORY OF MEDICINE (Hon. Secretaries—F. G. Crookshank, Archibald Malloch): at 5 P.M.
Presidential Address:
Dr. Charles Singer: Francis Adams (1796–1861), a Great General Practitioner.
Paper:
Dr. J. A. Nixon: The History of Famine Dropsy and Pioneer Work in India.

Thursday, Oct. 21st.

DERMATOLOGY (Hon. Secretaries—Henry MacCormac, H. W. Barber): at 5 P.M. (Cases at 4.30 P.M.)
Cases will be shown by:
Dr. Haldin Davis: Pemphigus Vegetans.
Dr. H. C. Semon: (1) Lichen Planus Annularis; (2) Mycosis Fungoides; (3) Purpura Annularis Telangiectodes (Majocchi).
Dr. J. L. Bunch: Kaposi's Disease.
Dr. H. W. Barber: (1) Acute Lupus Erythematosus; (2) Leukæmia with Cutaneous Tumours.

Friday, Oct. 22nd.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—E. A. Cockayne, B. Whitchurch Howell, Sidney Gilford): at 5 P.M. (Cases at 4.30 P.M.)
Cases will be shown by:
Dr. Langmead: (1) Case of Unilateral Wig; (2) Case of Congenital Absence of Certain Muscles: (3) Case of Rhythmical and Shock-like Movements, for Diagnosis; (4) Cirrhosis of the Liver.
Mr. Whitchurch Howell: Case of Fracture of Sacrum with Dislocation.
Other cases will be shown.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Oct. 19th.—4.30 P.M., Address:—Sir William Collins: Man *versus* the Microbe.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.
Museum Demonstrations in the Theatre of the College for Advanced Students and Medical Practitioners:—
MONDAY, Oct. 18th.—5 P.M., Prof. S. G. Shattock: Hypertrophy.
FRIDAY.—5 P.M., Prof. A. Keith: Specimens illustrating Various Congenital Malformations of the Alimentary Canal requiring Surgical Measures.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Oct. 18th.—2 P.M., Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. A. Saunders: The Onset of Tuberculosis in Infants and Children—Early Diagnosis and Treatment.
TUESDAY.—10 A.M., Dr. McDougal: Electrical Department. 5 P.M., Lecture:—Dr. Pernet: Skin Affections in connexion with Tubercle.
WEDNESDAY.—11 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 5 P.M., Lecture:—Dr. Owen: Early Diagnosis of Pulmonary Tuberculosis.
THURSDAY.—2 P.M., Mr. B. Harman: Eye Department. 5 P.M., Special Lecture:—Mr. H. Tilley: Some Experiences in the Treatment of Foreign Bodies in the Lower Air Passages and Œsophagus by Means of Direct Endoscopy (open to all Medical Practitioners).
FRIDAY.—12.15 P.M., Dr. Burnford: Applied Pathology. 5 P.M., Lecture:—Mr. Baldwin: Tuberculous Diseases of the Intestines and Some Conditions Mistaken for Rheumatism and Allied Disorders.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen.
Daily:—10 A.M., Ward Visits. 2 P.M., In-patient, Out-patient Clinics and Operations.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, Oct. 18th.—5.30 P.M., Post-Graduate Lecture:—Dr. P. Hamill: Cardiovascular Neuroses.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.

MONDAY, Oct. 18th.—2–3.30 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Dr. Aldren Turner: Ward Cases.

TUESDAY, Oct. 19th.—2–3.30 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Mr. Armour: Tumours of the Spine and Spinal Cord.

WEDNESDAY, Oct. 20th.—2 P.M., Lecture: Dr. Hinds Howell: Efferent Paths in Central Nervous System. 3.15 P.M., Lecture:—Dr. Grainger Stewart: Disorders of the Sympathetic Nervous System.

THURSDAY, Oct. 21st.—2–3.30 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Lecture:—Dr. Saunders: Examination of the Nervous System and Interpretation of Physical Signs.

FRIDAY, Oct. 22nd.—2–3.30 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Taylor: Ward Cases.

SATURDAY, Oct. 23rd.—9 A.M., Surgical Operations.

Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

TUESDAY, Oct. 19th.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration V., The Artificial Feeding of Infants.

THURSDAY.—3 P.M., Demonstration VI., The Modification of Milk.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Oct. 19th.—4.30 P.M., Lecture:—Mr. F. C. Moore: Rational Treatment of Dyspepsia.

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street (behind Whitworth Park).

THURSDAY, Oct. 21st.—4.15 P.M., Dr. A. C. Magian: Medical Treatment of Some Common Gynæcological Complaints. (Lecture II.)

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, Oct. 21st.—4.30 P.M., Mr. Douglas: Gastroptosis. (At Ancoats Hospital.)

Communications, Letters, &c., to the Editor have been received from—

A.—Mr. H. H. Averay-Jones, Liverpool; Sir R. Armstrong-Jones, Lond.; American Line, Southampton, Manager of; Association of Certificated Blind Masseurs, Lond.

B.—Dr. J. G. Black, Harrogate; British Hospital for Mothers and Babies, Woolwich; Prof. A. E. Boycott, Radlett; Mr. H. W. Bayly, Lond.

C.—Mr. F. R. Cross, Clifton; Central Association for the Care of the Mentally Defective, Lond., Hon. Sec. of; Chicago School of Sanitary Instruction.

D.—Dr. A. G. B. Duncan, West Hartlepool; Dept. of Scientific and Industrial Research, Lond.; Mr. H. Dickinson, Lond.; Mr. M. K. Dalal, Bootle; Prof. H. B. Day, Cairo.

E.—Dr. J. R. Earp, Lond.; Dr. H. Elliot-Blake, Beer.

F.—Dr. W. E. Fothergill, Manchester; Fight the Famine Council, Lond.; Dr. J. G. Forbes, Lond.

G.—Dr. J. Gairdner, Crieff.

H.—Mr. J. T. Henderson, Pietermaritzburg; Dr. J. Hedley, Middlesbrough; Dr. H. W. Hull, Norwich; Messrs. Handley Page, Lond.; Prof. A. J. Hall, Sheffield; Major W. E. Home, R.A.M.C.; Hackney College, Lond.; Hunterian Society, Lond.

J.—Mr. F. H. Jacobs, Nottingham; Mr. H. L. J. Jones, Liverpool; Mr. J. R. Jarrett, Trawsfynydd.

L.—Dr. D. A. Laird, Iowa City; Dr. C. E. Lakin, Lond.; Lord Mayor of London; London County Council; London Dermatological Society.

M.—Mr. F. W. Martin, Lond.; Messrs. Metchim and Son, Lond.; Mr. G. Mahomed, Bournemouth; Medico-Legal Society, Lond.; Mr. J. A. C. Macewen, Glasgow; Dr. H. A. Macewen, Lond.; Dr. R. W. MacKenna, Liverpool; Dr. P. Muller, Paris; Ministry of Labour, Lond.; Dr. G. R. Murray, Manchester; Dr. M. MacKinnon, Lond.

N.—National Safety Council, Chicago; Navy, Medical Director-General of, Lond.; National Anæsthesia Research Society, Columbus, Ohio.

O.—Dr. E. R. Ormerod, Nottingham.

P.—Messrs. G. P. Putnam's Sons, Lond.; Sir D'Arcy Power, Lond.; Dr. S. Park, Paignton; Mr. W. H. Plows, Lond.; Professional and Business Women's Hospital League, Lond., Sec. of.

R.—Dr. J. Ryle, Lond.; Mr. W. Rodier, Manchester; Royal Society of Tropical Medicine and Hygiene, Lond.; Dr. J. D. Rolleston, Lond.; Prof. E. S. Reynolds, Manchester; Dr. R. R. Rentoul, Liverpool.

S.—Mr. F. B. Shawe, Altrincham; Dr. A. D. Stewart, Glasgow; Society for the Prevention of Venereal Disease, Lond., Hon. Sec. of; Prof. W. Stirling, Manchester; Dr. E. W. Scripture, Lond.; Society of Superintendents of Tuberculous Institutions, Sutton, Hon. Sec. of; Society of Medical Officers of Health, Lond., Executive Sec. of; Mr. A. W. Sheen, Lond.; Miss J. Stewart, Glasgow; Dr. H. Scurfield, Sheffield.

T.—Tella Camera Co., Lond.; Dr. H. Townsend-Whitling, Market Harborough; Dr. J. M. Taylor, Philadelphia; Mr. G. G. Turner, Newcastle-on-Tyne.

U.—University of Glasgow.

V.—Victoria Infirmary, Glasgow, Sec. of.

W.—Dr. S. Wyard, Lond.; Dr. C. H. Warner, Nottingham; Dr. L. A. Weatherly, Bournemouth; Mr. H. Waller, Loughton; West London Hospital Post-Graduate College, Sec. of; Dr. F. J. Waldo, Lond.; Mr. C. Wright, Lond.; Messrs. Watson and Sons, Lond.; Rev. W. Wood, Madison, Maine; Mr. A. Willbond, Lond.; Dr. R. L. M. Wallis Lond.; Dr. J. D. Wynne, Norwich.

Y.—Dr. H. Yellowlees, Edinburgh; Yarrow Convalescent Home for Children, Broadstairs, Sec. of.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

PROLONGATION OF LIFE WITHOUT FOOD.

A HISTORICAL SUMMARY.

WHEN all foodstuffs are withheld from an animal, obviously it can only continue to live by drawing on its reserves and tissues, with corresponding loss of weight. What is usually called "starvation" postulates the free consumption of water, so that in "hunger-strikes" the question of water-hunger does not arise. Rubner showed that starving pigeons died of thirst in four days, but when water was allowed they lived twelve days. An interesting fact in this connexion may be mentioned. A dog deprived of food and water may live for 31–35 days, and water-hunger does not seem to arise, for a dog has no sweat-gland save on the pads of its feet, and does not sweat through the skin as in the case of man; the metabolism of its tissues appears to furnish sufficient water for the urine and respiratory execution. The longest fast on record of a dog is that described by Kumagawa in 1898; the animal died on the ninety-eighth day. This proves the enormous possibility of survival during complete withdrawal of food; the dog's weight was reduced from 17 to 5·96 kg., a loss of 65 per cent.

Experimental Results.

In his classic treatise, entitled "Sur l'Inanition" (1843), Chossat, who had made many experiments on animals, came to the conclusion that on an average death resulted when the loss of body-weight reached 40 per cent. Obviously there are exceptions. He also showed the tissues to be very unequally affected during starvation. In his observations made on pigeons fat lost 93 per cent., spleen 71, liver 54, muscles 42, but nervous tissue only 2 per cent. Voit in 1866 confirmed these observations in a cat killed after 13 days' starvation; adipose tissue 97, spleen 67, liver 54, muscles 31, bones 14, heart 3, nervous system 3, the first substances to disappear being those which are least essential to life. We may remember that the famous potter Bernard Palissy first burned all his wood, and at last, to maintain the heat of his furnace, threw in his furniture, his table, and his stools. The small loss of the nervous tissues, associated, no doubt, with the remarkable arrangements for the supply of blood to the brain, account for maintenance of the intellectual faculties to the end. The period at which death occurs depends very materially on the state of nutrition and the amount of available reserves, more especially fats and proteins at the start. It will also depend on the rate of metabolism, as shown by the fact that cold-blooded animals deprived of food may live 20 or more times longer than warm-blooded ones. Hippocrates taught that children endured hunger for a shorter period than adults, men for a shorter period than women, and old people longer than both. The latter statement, however, is highly improbable. The environment, the surroundings, the external conditions of temperature and moisture, are of profound importance. In the classical case of the wreck of the frigate *Medusa* in 1816, recorded by one of the survivors, Dr. Sauvigny—when 150 survivors were exposed on a raft in the open sea for 13 days—only 15 survived. Cases like these of compulsory starvation are, of course, complicated by lack of water, exposure, panic, fear, all tending to diminish the span of life.

As to the duration of starvation—water being taken—Moleschott, from observations collected by Tiedemann, calculated in 18 cases an average of 21–22 days, but of six melancholics who took water freely the average duration was 41·6 days. Essential to prolonged maintenance of life and euphoria in the faster are rest in bed and artificial warmth in bed and of the surrounding air and room, so that the heat generated in the body is not rapidly dissipated. The greatest quietude and avoidance of all unnecessary muscular movement are essential factors. Cardiac and respiratory muscular movements together require only about 10 per cent. of the energy available. It is recorded that the profound quietude of the melancholics was very noticeable. The protection as regards avoidance of loss of heat, application of artificial warmth, perfect rest, and avoidance of all muscular movements and personal exertion in every case of malnutrition, arising from whatever cause, are, of course, fundamental tenets of hospital practice. Professor Brücke, of Vienna, recorded in 1874 an interesting observation in this connexion in what was then known as the Fricke "Cur" of syphilis. The patients were not treated with mercury, then the almost universal method, but by a highly specialised and regulated diet along with doses of sulphate of soda. Up to a certain degree the so-called "Cur" could be carried out provided the patient remained in bed, but as soon as he

got out of bed he began to complain of hunger, cold, and weakness. All experiments on inanition show that in spite of the complete withdrawal of food—water being taken—all excretions continue to be poured out, though diminished in quantity and altered in quality—urine, fæces, sweat, bile, respiratory excretions, CO_2, and water—with corresponding diminution in body-weight. The respiratory quotient affords valuable evidence as to the probable metabolism. Careful and elaborate observations have been made, more especially on the urine, by Voit and by L. Luciani in his classical treatise "Fisiologia di digiuno" (1889), translated into German as "Das Hungern" (1890). Succi, a professional fasting man, who fasted several times for 30 days, was carefully observed by Luciani. At the beginning of his fast he weighed 63 kilos and at the end of 30 days 52 kilos. In fasting the temperature and pulse remain remarkably constant as in health. Professional fasters seem to be able to repeat the process with little inconvenience to themselves.

Metabolism during Starvation.

The blood, though diminished in quantity, is remarkably constant in its composition, fat being sometimes increased, and it is said the globulins also. When water alone is taken salt metabolism has to be considered, having regard to the excretion of salts in the urine. The excretion of sodium chloride is greatly diminished, and we know with what avidity, under certain conditions, common salt is retained in the body. As no gastric juice is formed less salt is required, but the urine contains more potassium, calcium, magnesium, and phosphates, the bones being the important source of calcium salts. A very cruel punishment occasionally practised long ago in Holland was to supply food deprived, as far as possible, of its salts. The withdrawal of chlorides from the food produces marked gastric and other derangements, the potassium ion becoming both dominant and deleterious. Having regard to the importance of calcium ions in coagulation of blood, of the heart beat, and many other functions, it is plain that the calcium metabolism of the bones must play a most important part during inanition. In the late stages of prolonged starvation the quantity of β-oxybutyric acid and acetone in the urine is greatly increased, and the urine of Succi from the 23rd to 30th day of starvation showed high values for these substances, similar to those occurring in diabetes.

Some animals undergo long periods of voluntary abstinence from food, but in these cases Nature takes a long view and makes due preparation by storing up reserves during a period of plenty—like Joseph in the land of the Pharoahs—against a season of famine or scarcity. Many years ago Miescher, when professor of physiology in Bâle, found that the Rhine salmon during the long up-stream journey of months' duration to its spawning-ground, virtually took no food. While still in the salt water it lays up much fat and protein, chiefly in its tail muscles, and the energy for its locomotion and leaping or jumping of rapids is derived from these reserves. More remarkable, however, is the fact that apparently by a mysterious autolysis the proteins of the muscles are liquefied and are the chief sources from which the large sexual organs and their complex products, male and female, are formed. The weight of the muscles is diminished by about 55 per cent. Hibernating animals, such as the dormouse, hedgehog, marmot, and, above all, the bear, lay up reserve stores to draw on during a period when, owing to the fall of the external temperature and their very unstable regulatory heat centre, their economic wants are few. Observations on the marmot by Raphael Dubois show that it may hibernate six months without taking food or water.

Celebrated Instances.

During his fasts, according to Luciani, Succi took laudanum at the beginning of his fast to allay his gastric pains, but Merlotti in Paris, who fasted 50 days, took only water, so that the famous Dr. Tanner, with his fast of 40 days, is now far from heading the list of celebrated fasters. A little more than 10 years ago Mr. Upton Sinclair, of Chicago fame, in the *Contemporary Review*, stated that he had met several people who had fasted from 40 to 50 days. The longest fast he had heard of was 72 days. Mr. Sinclair tried a personal fast for 12 days for purely hygienic reasons and with excellent results; while Professor E. Gley, of the Collège de France, Paris, cites a case of a prisoner at Toulouse, who died in 1831, after fasting for 63 days. The observations on Succi and Cetti—professional fasting men—show that the craving for food at meal-times was very marked, but in the later period of the experiment even the desire for food may be lost. Most marked is the progressive and increasing feeling of physical weakness, and the disinclination to undertake exertion of any kind, physical or mental. Some animals pass a large part of their time in sleep or semi-stupor. The marked loss in weight of the digestive glands and muscles shows that the latter supply the nitrogenous substances, and these losses readily account for inactivity and unwonted lethargy. Tigerstedt, from his experiments, concludes that the minimum metabolism of a man in bed corresponds to 24–25 calories per kilogramme per day. There seems to be a general agreement that the sensations of hunger increase during the first few days of starvation, and then decrease even to complete cessation. Viterbi, who starved himself to death voluntarily and kept a record of his feelings, noted complete absence of hunger after the fifth day. Cetti and Breithaupt, observed by Munk in 1893, did not experience any discomfort from hunger after the first few days. A man, aged 40, who fasted 31 days, and with no previous training in fasting, investigated by F. G. Benedict in "A Study of Prolonged Fasting," 1915, gave similar testimony.

A far more common practice than starvation is that of over-eating. It makes one wonder sometimes how some people dispose of their enormous intake. The surgeon, W. Wadd, at the beginning of the nineteenth century, who published several books on corpulence and some mems, maxims, and memoirs, and on lineaments of leanness and mems on diet, gives the advice something like this:—

> Fast and fear not, you will need no drop or pill,
> Hunger may starve, excess is sure to kill.

The Italian nobleman, Luigi Cornaro (1467–1566), in his classic "Discorsi della vita sobria," gives emphatic proof of the marvellous benefit sometimes to be derived from even extreme moderation in eating. At 40 his physicians gave him up, but he had ideas of his own and followed them out, restricting his daily food to 12 ounces and 14 ounces of wine, with marvellously beneficial results, leading an active and moderately gay life until he was a hundred. Pope Pius XIII. was directed to model his regimen upon Cornaro's with marked benefit to the Pontifical health.

In the case of hunger in prolonged starvation Professor A. J. Carlson, in his work on "Control of Hunger in Health and Disease," remarks that "in the popular mind prolonged starvation is associated with great pain and distress, despite reliable reports to the contrary from many persons who have undertaken voluntary starvation. Such persons state, almost without exception, that after the first three or four days of starvation the sensation of hunger is no longer felt, or, at least, is not essentially painful or uncomfortable."

PUBLIC HEALTH IN NEW SOUTH WALES, 1918.

OF the various public health legislative proposals that were brought foward during 1918 in New South Wales the only one that became law was the Venereal Diseases Act, designed to secure proper treatment for such diseases and to prevent the spread of infection. The Act had not been brought into operation in December, 1919, owing to the fact that the public hospitals at that time were fully occupied by cases of influenza, which prevailed throughout the whole State and laid an unusually heavy burden on the authorities concerned with the control of the epidemic. Dr. Robert T. Paton, Director General of Public Health, and President of the Board of Health, reports that the State was comparatively free from infectious disease during 1918, with the exception of diphtheria and scarlet fever. Of diphtheria there were 5151 cases and 221 deaths throughout the State, not quite so severe a visitation as in 1917, when there were 5805 cases and 247 deaths; this disease is by far the most prevalent of the zymotic group, and is not only met with in every single municipal area (except Ingleburn) in the metropolis and adjoining shires, but also occurs in every area in the Hunter River Combined Districts, and in 98 of the 121 country municipalities. The disease was of a mild character, and Dr. Robert Dick M.O.H., Hunter River, considers that the widespread use of antitoxin has been the chief factor in producing this satisfactory result. Scarlet fever occurred in every district but one in the metropolitan area and in many of the provincial districts, but was also of an exceedingly mild type; there were only 15 deaths among 1308 cases. There was not a single case of smallpox nor of plague throughout the whole State. Tuberculosis is notifiable in Sydney and the surrounding area, but not elsewhere in New South Wales except in two localities. In Sydney and the neighbourhood comprised in the Metropolitan Combined District there were 1091 cases and 507 deaths; in the Hunter River Combined District 51 cases were notified and 52 deaths; in Katoomba municipality there were 9 cases notified and 10 deaths; in the Blue Mountains shire 157 cases and 17 deaths. An Act for the control of venereal diseases was passed in 1918, but its provisions remain in abeyance for the present. The incidence of typhoid fever in Sydney (297 cases) was lower than in any previous year since notification became obligatory in 1898; the attack-rate was 0·37 and the mortality 0·06 per 1000; previous to 1911 the attack-rate had (with two exceptions) always exceeded 1·00 per 1000 and the death-rate (with one exception) 0·1 per 1000. The infantile mortality ratio (60 per 1000) was lower than in any previous year except 1917, when it was 58; previous to 1904 the mortality had always exceeded

100, and before 1890 it had always (with one exception) exceeded 150.

Full particulars are given in this report concerning the numerous hospitals and asylums in New South Wales. At the Blind Asylum, Paramatta, with an average population of 172 (of whom 33 are blind and the remainder suffering from defective sight and senility), the inmates are employed in the bakery, from which issued 823,357 lb. of bread and 42,513 lb. of cake for distribution to various institutions. Dr. J. Burton Cleland reports on the work of the Microbiological Laboratory, which consisted chiefly of an investigation into the ætiology of acute encephalo-myelitis in man, and the preparation of large quantities of culture media and of vaccine in connexion with the outbreak of influenza. He also refers in feeling terms to the loss of Lieutenant G. G. Grant, who had worked in the laboratory since 1898 until his departure in 1915 to undertake special research work in the Mediterranean, Egypt, and Palestine; he contracted malaria and died at Gaza in 1918. This valuable report is admirably printed and very fully illustrated with diagrams and tables.

DISTINGUISHED CORPORA VILIA.

REFERRING to the lack of anatomical material brought to the notice of boards of guardians by the Ministry of Health, a clerical guardian at Wandsworth is reported to have suggested that Dr. Addison should set the example by bequeathing his body for the uses of science. Writing in a recent number of the *Indian Medical Record*, Mr. Arthur Macdonald, well known at Washington, U.S.A., in the field of anthropological research, states that he has signed over his own body to science, including skeleton and viscera as well as brain, and urges all persons to be willing to do likewise, especially those who have had the advantage of higher education and professional careers.

If, he writes, we had knowledge of the bodies of our ancestors, including their ages at death and their different diseases; if also their physical measurements, colour of hair, eyes, and skin were known; if, in brief, we were in possession of adequate knowledge of the physical nature of our ancestors before and after death, then we would know better how to protect ourselves from the physical weaknesses to which we are most susceptible.

Just as we are benefited by knowledge of our ancestors, from whom we have received most of what we are, so we in turn should make our ancestorship beneficial to future generations.

He recalls the foundation in 1881 of the Mutual Autopsy Society of Paris for securing élite brains for scientific study. In the United States, the pioneer in such was the American Anthropromotic Society of Philadelphia, established in 1859, followed by the Cornell Brain Association, directed by Professor Burt G. Wilder. Later, Retzius, the Swedish anthropologist, and Tigerstedt, the Finnish physiologist, proposed that their colleagues should bequeath their brains for purposes of scientific investigation. And he adds a list of Americans whose brains have been studied, which includes names of Abraham Lincoln (1865); Louis Agassiz (1873), naturalist; Philip A. Aylett (1878), blind physician; Edouard Seguin (1880), physician; Walt Whitman (1893); Gurrick Nallery (1894), ethnologist; Caroline B. Winslow (1896), physician and the only American woman whose brain has been studied; Henry Wilson (1875), Vice-President of the United States; Samuel D. Gross (1884), physician; Isaac J. Wistar (1905), scientist and philanthropist; and J. McGee (1912), ethnologist.

THE SEARCH FOR GOLD AND PEARLS.

A COURSE of lectures on Anthropology and Geography, the primary object of which is to give an account of the geographical distribution of the races of mankind at the present time and in the past ages, and especially to consider the nature of the circumstances which brought about modifications in this distribution and grouping, is being held at University College, London. In an interesting address introductory to this course, delivered on Oct. 12th, Professor G. Elliot Smith said that while geographical environment of course played its part, the main factor to be considered was the search for pearls and gold. By a series of maps upon which sites of civilisation and culture were plotted he showed that these points coincided with evidence of the existence of gold or of pearls. When investigating the practice of the mummification of bodies, on mapping out the distribution of this custom in various parts of the world, he found evidence which seemed to suggest that it had spread along definite routes, and was associated with the presence of rough stone monuments. These monuments corresponded with gold and pearl areas, and the obvious inference was that people following these routes were searching for this particular form of wealth. Incidentally another curious fact was that terrace cultivation was also associated with these routes, and even in England, where there could be no need for primitive peoples to practise this form of land culture, there were traces of the custom existing, showing that the immigrants had brought their habits of life with them. Among primitive peoples the military aristocracies raided established communities in order that they might collect the gold without labour. Even in neolithic times, and long before a currency was established, there was evidence of the search for gold and pearls, the people attaching to these substances magical properties which would protect the individual from the risk of death and from old age and disease.

MEDICAL ADVICE BY WIRELESS.

MODERN conditions threaten to entice medical men into breaking one of the oldest rules and most valuable safeguards in medicine—not to treat a patient unless one has seen him. It is reported that during the eastward-bound voyage of the American line steamer *St. Paul* the ship's surgeon was handed a wireless message stating that a member of the crew of the American tramp steamer *Schroon*, many miles distant, was suffering from pains in the right side and fever. The doctor is said to have wirelessed back for more detailed symptoms, and on receipt of these to have diagnosed the case as appendicitis. Medical advice was then frequently transmitted through the air. The vessels were in communication for four days, at the end of which period a favourable report was received. It is clear that a strict adherence to rigid rules in such cases might safeguard the reputation of the doctor at the expense of the patient. On the other hand, if the custom of acceding to demands for advice by telephone, telegram, or wireless is extended unduly mistakes must needs occur; but they will not be the doctor's fault.

A DRASTIC CONSUMPTION CURE.

WE have received the following letter from Palánka in Jugo-Slavia:—

I have discovered two methods of complete cure for consumption of the lung (tuberculosis). The one method arrests hæmorrhage on the spot, and the wounds of the lung scar over. By using the second method the patients get new lungs. The old lung rots away, the patient expectorating it to the accompaniment of a penetrating cadaverous odour, but under the ruins of the old decay a new powerful lung grows, with which the patient can live to the age of 96 years. Only authorities in modern medical science are entitled to deal with me in this matter.

SAMUEL GOTTHARDT, Retired Schoolmaster.

We have had gratifying evidence of lively new growth in Serbia after an unparalleled period of what might be called acute decay. Serbian lungs, perhaps, share the vitality of the national spirit. The experience of the first tuberculin era suggests that the Germanic races cannot tolerate such drastic remedies. The lungs may be cast off as a slough, but the less hardy westerner does not live to grow new ones.

CLIMATE IN RELATION TO PUBERTY.

Professor E. Steinach, president of the Biological Experimental Station of the Academy of Sciences of Vienna, has carried his studies in what he terms "puberty glands" one stage further (cf. THE LANCET, Sept. 4th, p. 533). In conjunction with P. Kamerer, he finds that by exposing white rats to increasing temperatures up to 35° C. the Leydig cells (male puberty glands) of the testes increase without diminishing the condition of the seminiferous tubules and spermatogenesis. In the ovary, the theca lutein cells (female puberty glands) increase and obliterate some of the follicles, without affecting the ripening of other follicles and their ovogenesis. The growth of the puberty glands is associated with an enlargement of the whole sex organs. The subordinate genital annexes of the warmed males—vesiculæ seminales and prostate—are remarkably enlarged, and the enlargement is regarded as due to the increase in the cells of Leydig. Similar results obtain in the warmed females—greatly enlarged oviducts and uterus, results attributed to the theca lutein cells. As the generative tissue itself is not increased, the enlargement of the accessory sexual organs under the increased external temperature treatment is regarded as due to increase of the puberty glands. The extragenital sexual organs, on the other hand, seem to be less developed than in lower temperatures. In the skeleton, growth of the body, and in the hair coverings the warm male resembles the female. The enlargement of the puberty gland reaches its maximum at 35°, while the curve of capacity for propagation reaches its apex at 25°. The authors compare their results with the results obtained in the human race in warm climates. In those races the sexual condition leads the author to conclude that there is an increased activity of the puberty gland, and they cite a large number of ethnological and ethnographical observations in support of their view, the influence of time of the year, altitude, moisture, dwellings, activity, and feeding on the onset of puberty, fertility, and development of the sexual characters are adduced. The human races may respond to a moderate and gradual change of climate similar to the enlargement of the puberty glands that obtains in white rats.

THE Dollard Printinghouse, of Essex-street, Dublin, have sent us an interchangeable temperature chart, suggested by Dr. P. J. Burke, of Sligo, which may be used for twice daily, four times daily, or four-hourly records. It is intended for tuberculosis work, and will be found practical and useful.